DADF-J1

SERVICE MANUAL

REVISION 0

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Canon

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Scope of Application

This document is published by Canon Inc. for the purpose of providing its readers with the technical knowledge needed to install, maintain, and repair the product under discussion. It may also be used as a reference when studying the technical aspects of the product.

The contents of this document are generic in nature so as to cover all areas where the product is sold. In this respect, it is important to note that some of the specifications or descriptions found in this document may not apply in some areas.

In addition, it must be borne in mind that the specifications or descriptions may differ from those noted in the actual machine or found in advertisements or in other printed matter.

All questions concerning this document are to be addressed to the Service Department of the appropriate Sales Company.

Revision

The information disclosed in this document may not necessarily be accurate because of updates made to the product, and major differences will be communicated in the form of technical bulletins.

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Warning

This document must be handled with utmost care. Disclosure of its contents may lead to legal proceedings.

1 Symbols Used

This documentation uses the following symbols to indicate special information:

Symbol	Description
	Indicates an item of a non-specific nature, possibly classified as Note, Caution, or Warning.
	Indicates an item requiring care to avoid electric shocks.
	Indicates an item requiring care to avoid combustion (fire).
	Indicates an item prohibiting disassembly to avoid electric shocks or problems.
	Indicates an item requiring disconnection of the power plug from the electric outlet.
Memo	Indicates an item intended to provide notes assisting the understanding of the topic in question.
REF.	Indicates an item of reference assisting the understanding of the topic in question.
	Provides a description of a service mode.
	Provides a description of the nature of an error indication.
	Refers to the Copier Basics Series for a better understanding of the contents.

2 Outline of the Sevice Manual

This Service Manual contains basic information needed to service the DADF-J1in the field, conducted for the purpose of maintaining its product quality and a specific level of performance.

This Service Manual consists of the following chapters:

Chapter 1 *General Description*, shows the features and specifications of the machine, as well as the names of parts and how to operate it.

Chapter 2 *Operations and Timing*, explains the mechanical and electrical systems of the machine by function in relation to the principles of operation and timing at which they are driven.

Chapter 3 *Mechanical Systems*, shows how to disassemble/assemble the machine and make adjustments.

Chapter 4 *Maintenance and Inspection*, provides tables of periodically replaced parts and consumables/durables and a scheduled servicing chart.

Chapter 5 *Troubleshooting*, contains troubleshooting tables and diagrams of electrical parts, lists of VRs, LEDs, and check pins by PCB, and an outline of self-diagnosis.
In addition, an appendix is added to offer a general timing chart, list of signals/abbreviations, general circuit diagrams, and PCB diagrams.

The machine comes with an Installation Procedure. Refer to the instructions in the booklet when installing the machine.

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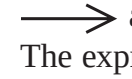
The following rules apply throughout this document:
As a rule, the descriptions in this documentation are based on the following:

1. As needed, the work of each function and its relationship with electrical and mechanical parts are explained; where applicable, the timing at which associated parts are driven are also outlined.
   In a diagram, the symbol indicates a path of mechanical drive; the symbol  accompanied by a notation indicates the flow of an electrical signal.
   The expression “power-on” means turning on the power switch, closing the front door, and closing the delivery door so that the parts of the machine are supplied with power.
2. In a digital circuit, the state of a signal is indicated by ‘1’ if its voltage level is high and by ‘0’ if low. The level of voltage, however, differs from circuit to circuit.
   The machine uses a CPU; however, since the internal functions of a CPU is outside the scope of a service person, detailed explanations are omitted from descriptions. In this document, a circuit diagram may cover from sensors to inputs of a controller PCB or from outputs of a controller PCB to loads, or it may be a functional diagram.

The descriptions of the machine are subject to change for product improvement, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to be fully familiar with the contents of this Service Manual and Service Information bulletins to develop a good understanding of the machine, equipping themselves with the ability and skill to identify faults and to maintain the machine in good order.

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CHAPTER 1

GENERAL DESCRIPTION

1 Features

a. First-Page-First Handling Mechanism

The DADF is equipped with a mechanism to handle the pages of a set of originals in sequence, thus increasing the productivity of a copier possessing a face-down delivery mechanism.

b. Pre-Reversal Mechanism

The DADF is equipped with a pre-reversal mechanism to increase productivity when handling double-sided originals.

c. Stream Reading of All Sizes

The DADF is capable of allowing stream reading for all sizes. (However, the copy ratio must be between 25% and 200%.)

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2 Specifications

2.1 DADF-J1

Item	Specifications	Remarks
Pickup of originals	Auto pickup/delivery	
Side of original placement	Original tray: face-up Manual feeder: face-down	
Reference of original placement	Original tray: center Manual feeder: rear (butted against stopper)	
Separation of originals	Top separation	
Types of originals	Sheets Original tray: 50 to 200 g/m2 Manual feeder: 38 to 200 g/m2	However, 163 g/m2 max. for large-size, double-sided copies (200 g/m2 max. in saddle mode).
Sizes of originals	A5 to A3 / STMT to 279.4 x 431.8mm(11" x 17")	
Stack on original tray	Small-size: 100 sheets A5, A4, B5, STMT, LTR, A4R, A5R, LTRR Large-size: 100 sheets A3, B4, LGL, 279.4 x 431.8mm(11" x 17")	Paper of 80 g/m2 or less. Paper of 80 g/m2 or less.
Stack of originals on original delivery tray	Small-size: 100 sheets A5, A4, B5, STMT, LTR, A4R, A5R, LTRR Large-size: 100 sheets A3, B4, LGL, 279.4 x 431.8mm(11" x 17")	Paper of 80 g/m2 or less. Paper of 80 g/m2 or less.
Original handling mode	Single-sided original, double-sided original	
Stream reading mode	Yes (all sizes; single-sided, between 25% and 200% only)	
Manual feed mode	Yes (single sheet only)	
Identification of original size	Yes (default sizes only)	
Detection of residual original	Yes	
Mixing of originals of different sizes	Yes (of the same width)	
Book original	Yes (40 mm or less in thickness)	

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Item	Specifications	Remarks
Communication with copier	IPC communication 2	
Power supply	24 VDC (from copier)	
Weight	21 kg (approx.)	Excluding delivery tray.
Dimensions	646 (W) x 569.5 (D) x 143 (H) mm	Excluding delivery tray.
Serial number	XFS: xxxxx	
	XFU: xxxxx	
Operating environment	Same as copier.	
Temperature	Same as copier.	
Humidity	Same as copier.	

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The above specifications are subject to change for engineering revisions.

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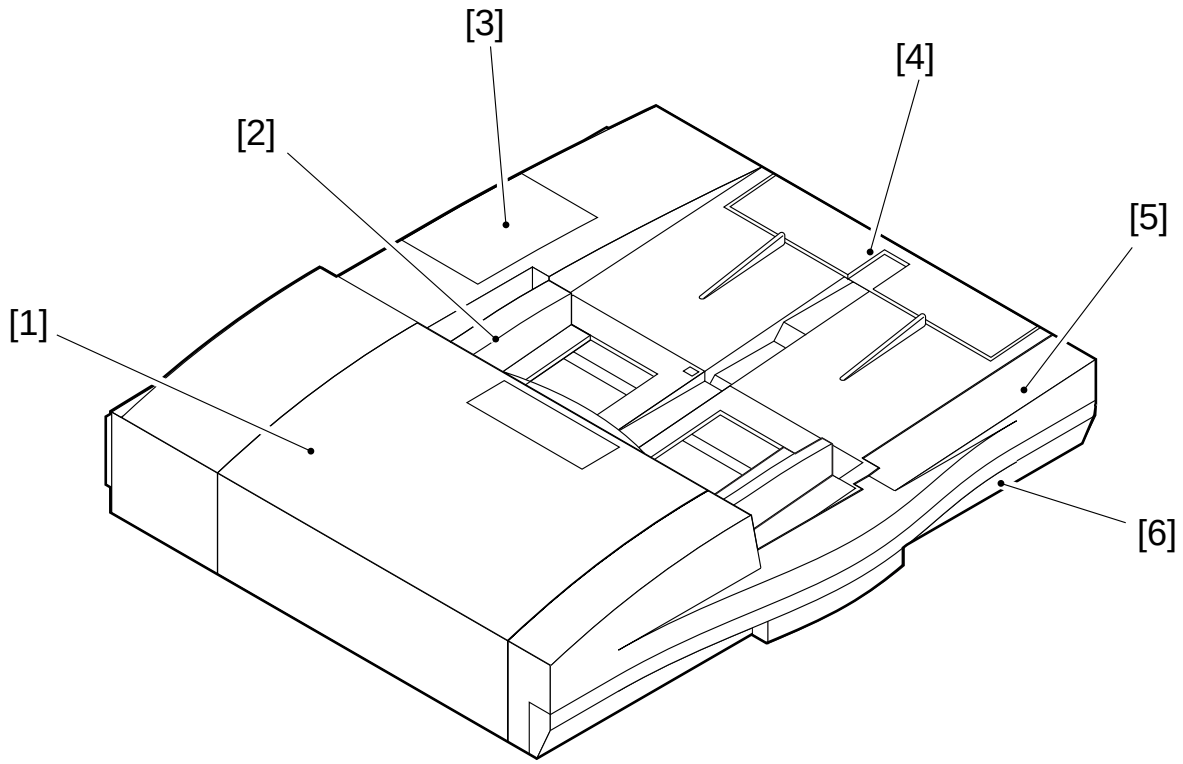
3 Names of Parts

3.1 External View



[1] Upper cover
[2] Side guide
[3] ADF controller cover
[4] Manual feed tray
[5] Front upper cover
[6] Front lower cover

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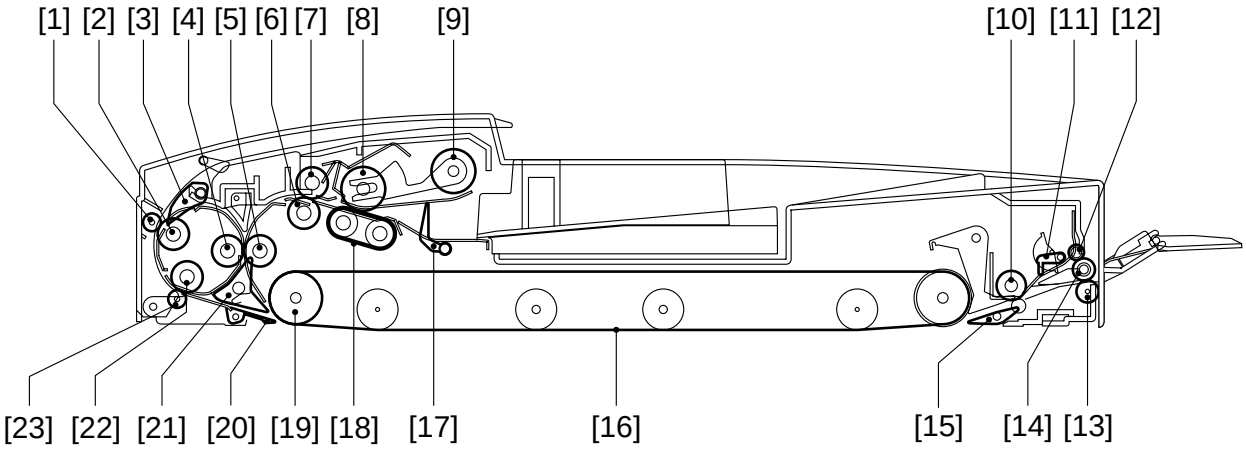
3.2 Cross Section



[1] Reversing roller B member
[2] Reversing roller B
[3] Reversing flapper
[4] Registration pressure roller
[5] Registration roller
[6] Pull-off roller
[7] Pull-off pressure roller
[8] Feeding roller
[9] Pickup roller
[10] Manual feed registration roller
[11] Manual feed stopper plate
[12] Delivery roller A member
[13] Delivery roller B member
[14] Delivery roller
[15] Delivery guide flapper
[16] Feeding belt
[17] Stopper plate
[18] Separation belt
[19] Feed belt driver roller
[20] Guide flapper
[21] Pre-reversal flapper
[22] Reversing roller A
[23] Reversing roller A member

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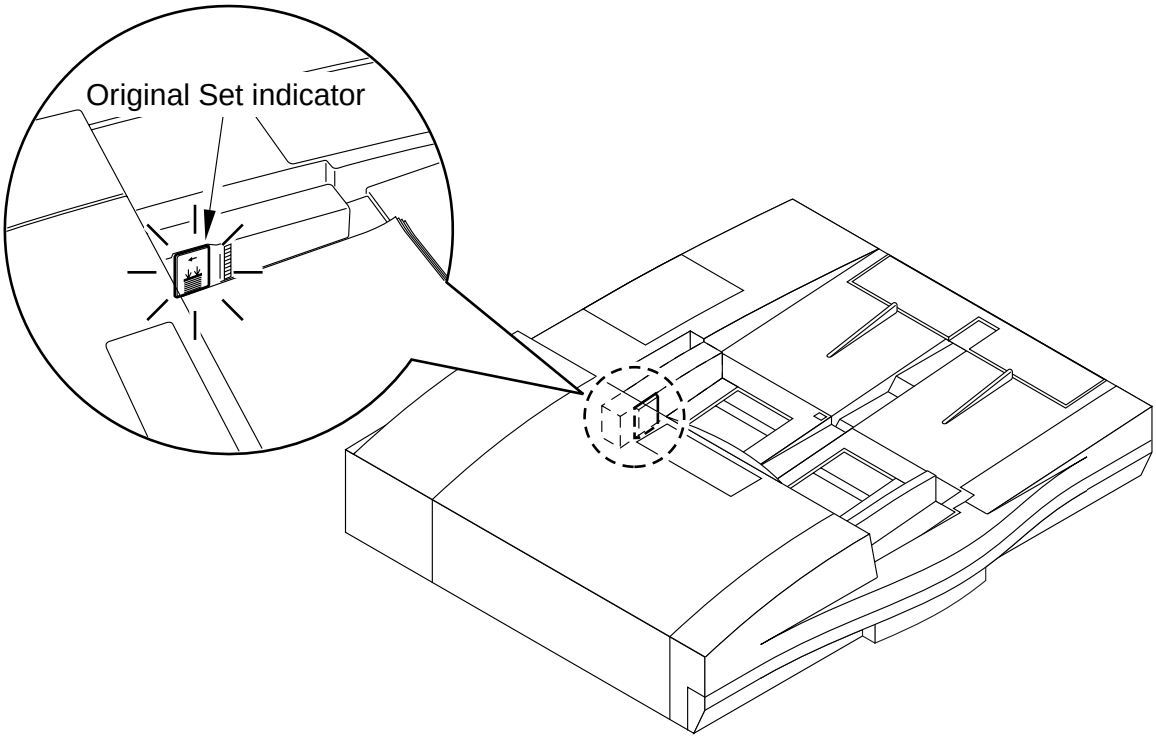
4 Using the DADF

4.1 Original Set Indicator

The Original Set Indicator goes on when an original is placed on the original tray, and flashes when a jam occurs.



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4.2 Warnings and Action to Take

If the Original Set indicator starts to flash while an original is inside the DADF, suspect a jam; go through the following to remove the jam:

1) Remove all originals from the original tray.
2) Open the upper cover, and remove the jam, if found.
3) Open the DADF, and remove the original from the copyboard glass, if found.
4) Put the originals back into initial sequence, and place the stack in the DADF.

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4.3 Routine Maintenance by the User

Instruct the user to clean the following at least once a week:

Item	Description
Copyboard glass	Wipe it with a cloth moistened with water, and then dry wipe it. Or, use alcohol.
Feeding belt	Wipe it with a cloth moistened with water, and then dry wipe it. Or, use alcohol.
Registration roller	Execute cleaning in the copier's user mode.

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CHAPTER 2

OPERATIONS AND TIMING

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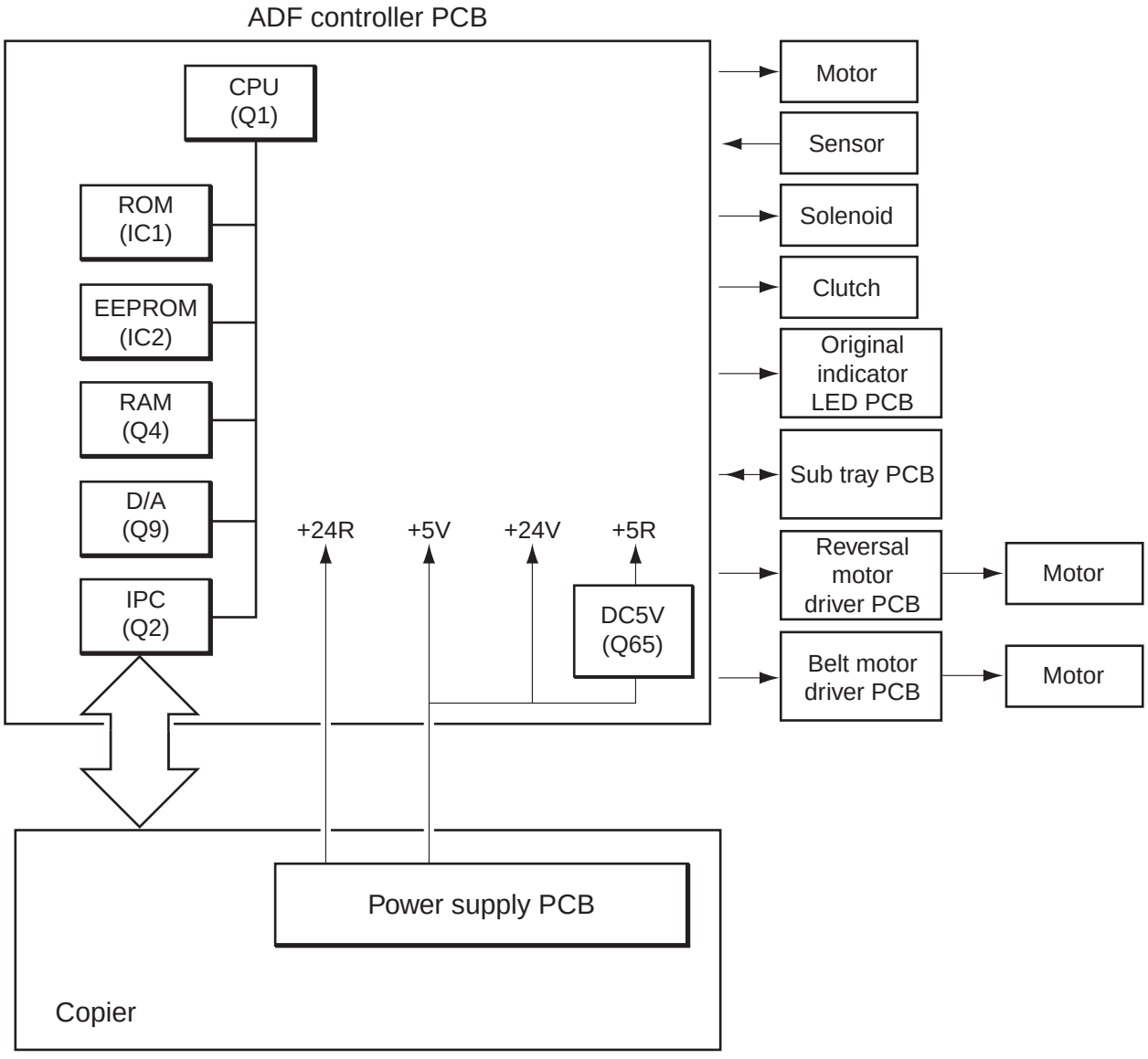
1 Basic Construction

1.1 Outline of the Electrical Circuitry

The electrical mechanisms of the DADF are controller by the ADF controller PCB, which is a microprocessor (CPU).

The CPU interprets input from the sensors and signals from the copier, and generates signals to drive such DC loads as motors and solenoids according to pre-determined timing of operation.



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1.2 Communication with the Copier

The DADF uses IPC communication 2, which enables higher communication speeds than the existing mode of IPC communication.

E422
E712
Indicates a fault in the communication between the DADF and the copier.

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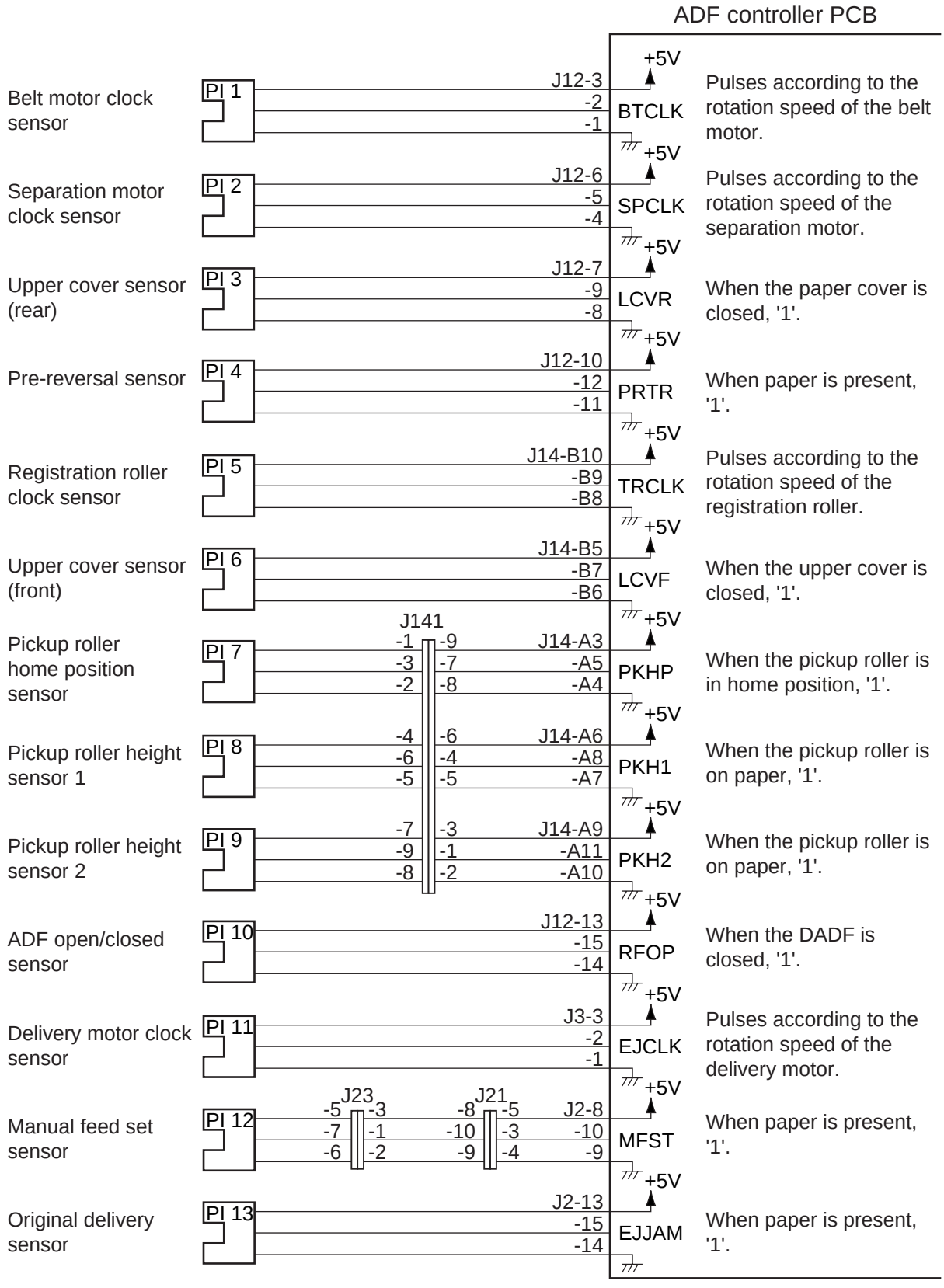
1.3 Inputs to the ADF Controller PCB

Inputs to the ADF Controller PCB (1/2)



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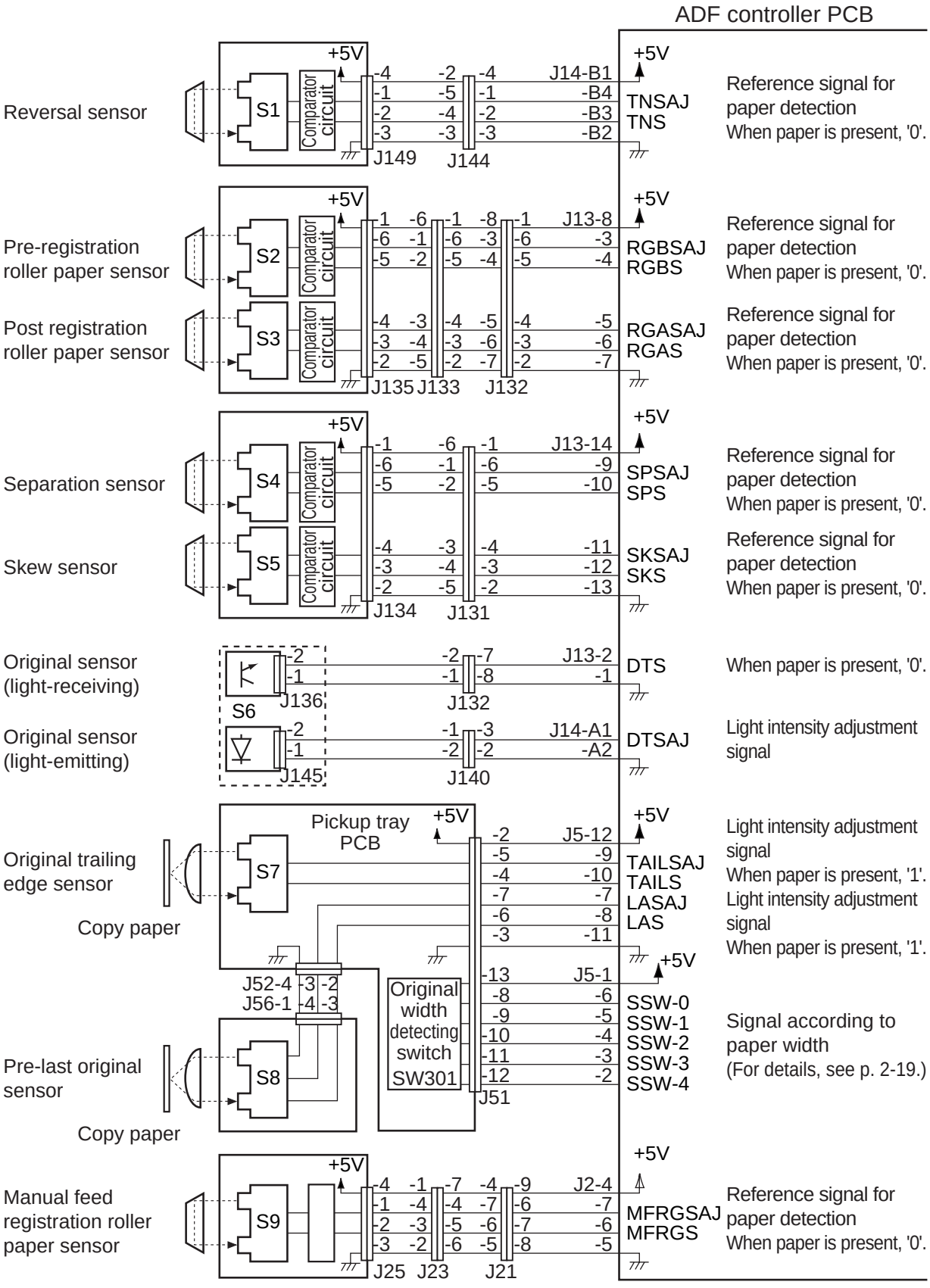
Inputs to the ADF Controller PCB (2/2)



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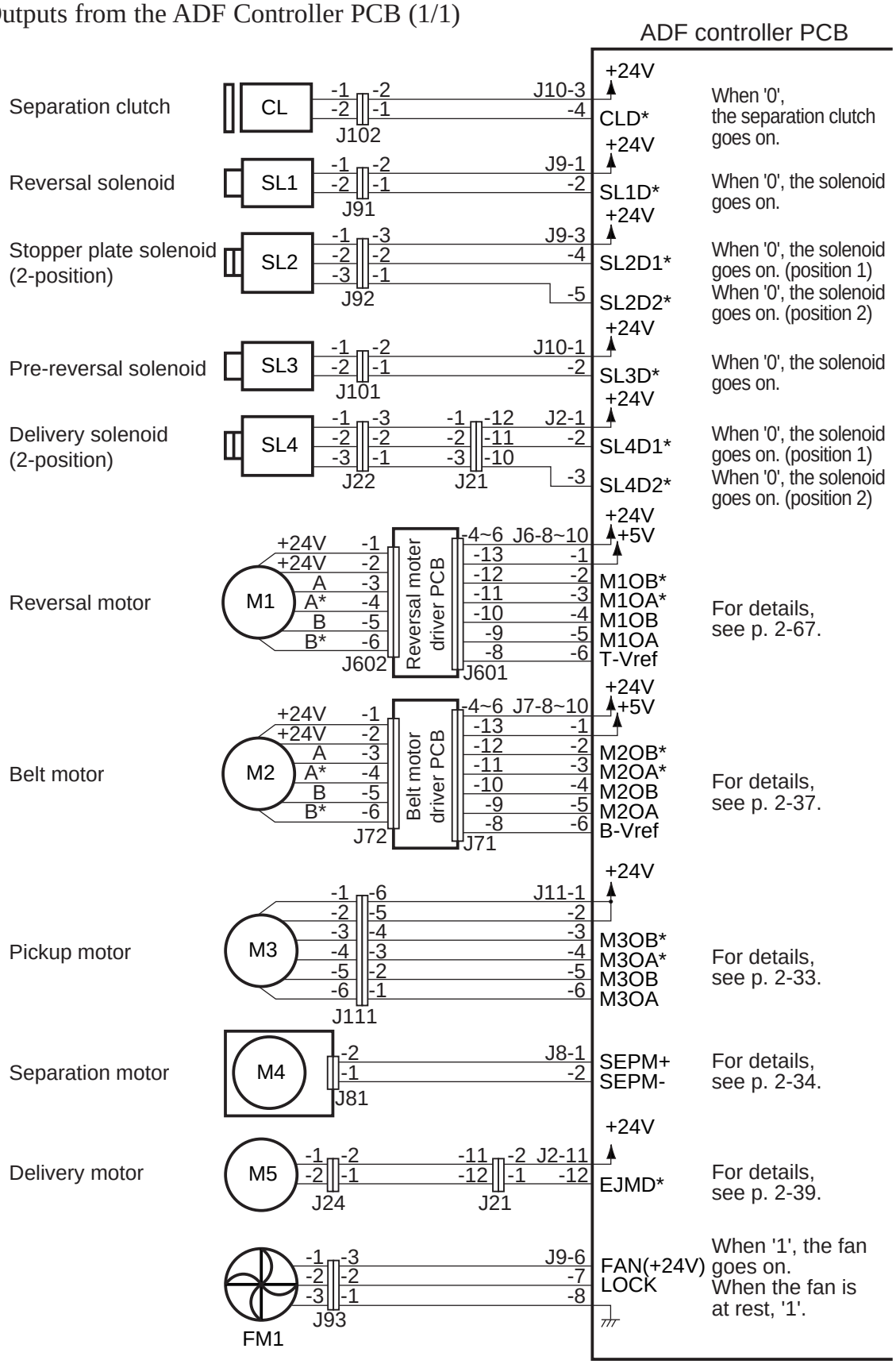
1.4 Outputs from the ADF Controller PCB

Outputs from the ADF Controller PCB (1/1)



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2 Basic Operations

2.1 Outline

The DADF uses five motors and one clutch to pick up, separate, move, and deliver originals.

Name (notation)	Description
Reversal motor (M1)	Moves and reverses originals.
Belt motor (M2)	Moves originals.
Pickup motor (M3)	Moves up/down the pickup roller.
Separation motor (M4)	Separates originals.
Delivery motor (M5)	Delivers originals and picks up manually fed originals.
Separation clutch (CL)	Turns on/off the pull-off roller and the separation/feed drive system.

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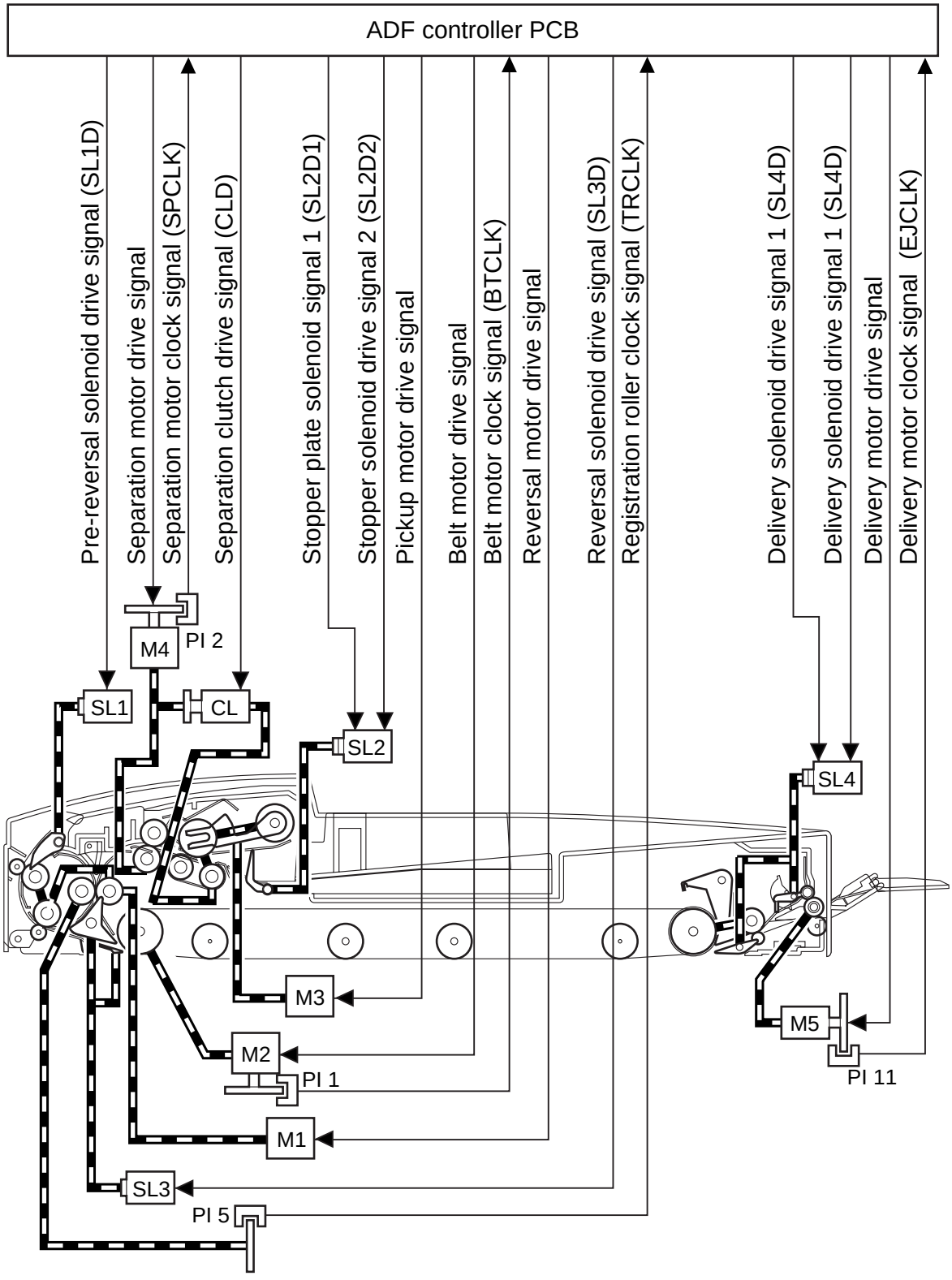
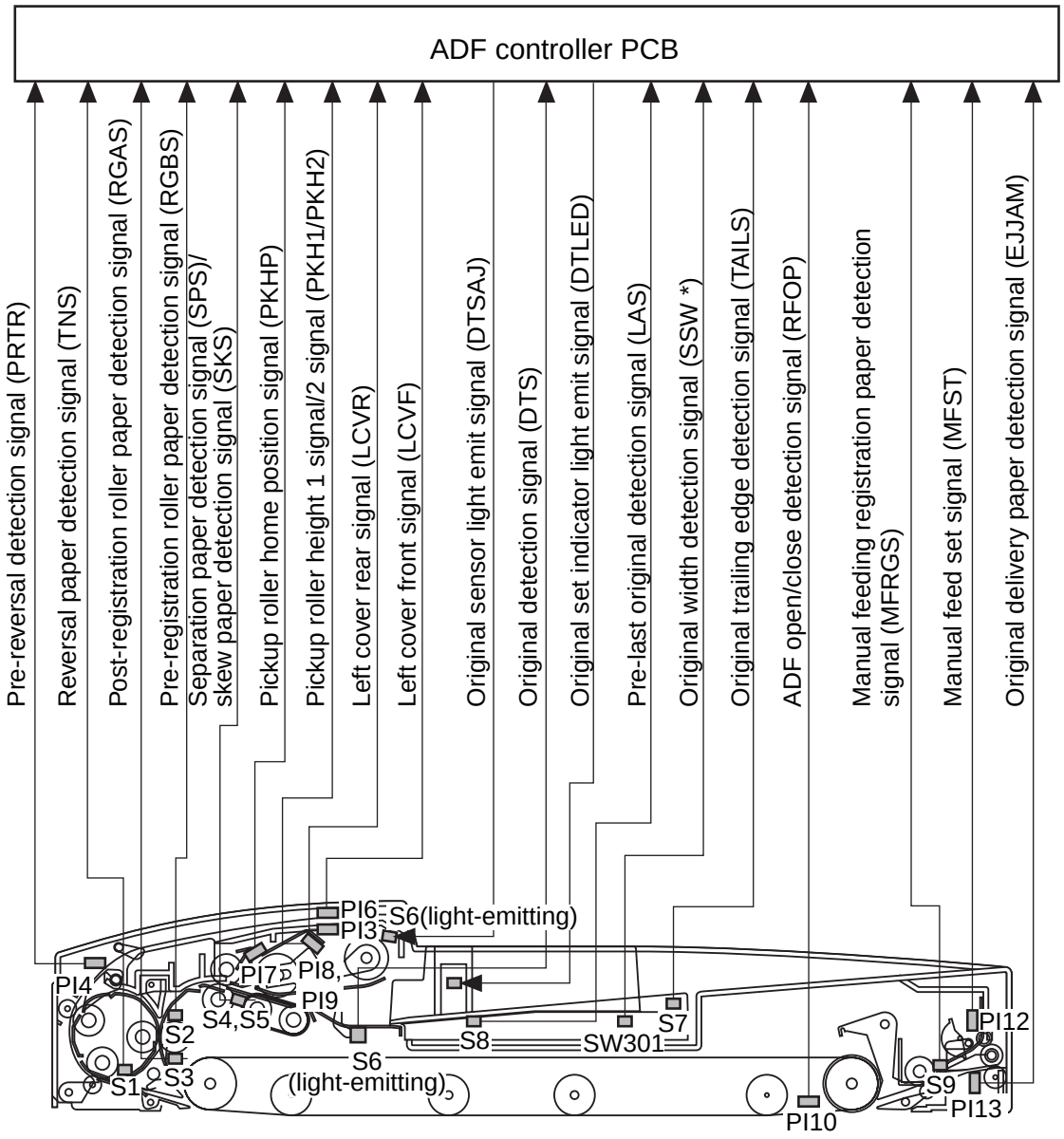


F02-201-01 Diagram of Drive



F02-201-02 Sensor Arrangement

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2.2 Operations

2.2.1 Outline

The DADF operates in either of the following three modes; the DADF operates in response to instructions from the copier, executing appropriate modes to suit the copier's operations.

The following table shows each operation mode, an outline of its operation, and its corresponding copying mode:

No.	Mode	Operation	Copying mode	Copying operation
1	CW pickup/delivery	Picks up an original, and delivers it as it is after copying.	Single-sided original to single-sided copy Signal-sided original to double-sided copy	Stream reading (fixed if the reproduction ratio is not between 50% and 200%)
2	Pre-reversal pickup/reversal/delivery (small-size original) Reversal pickup/reversal/delivery (large-size original)	Reverses an original, picks it up, reverses it once again after copying, and delivers it.	Double-sided original to double-sided copy Double-sided original to single-sided copy	Fixed reading
3	Manual feeder pickup/delivery	Picks up an original from the manual feeder, and delivers it after copying.	Manual copy	Fixed reading

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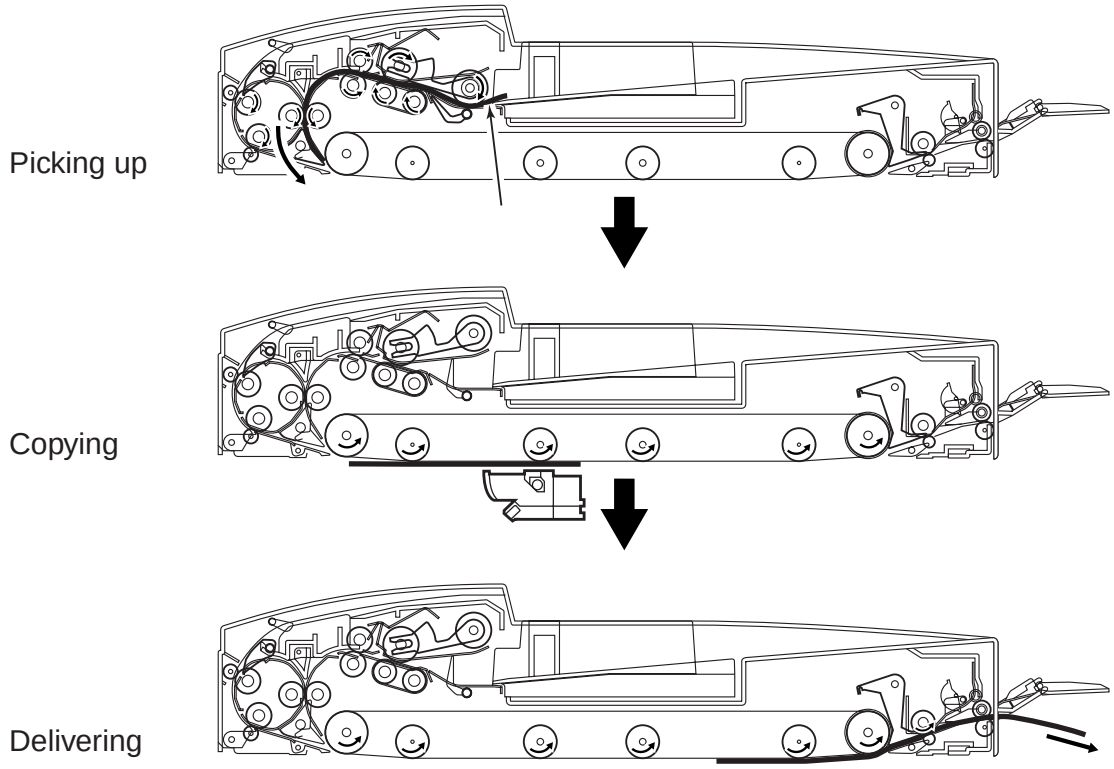
2.2.2 CW Pickup/Delivery

The following is an outline of the flow of originals.



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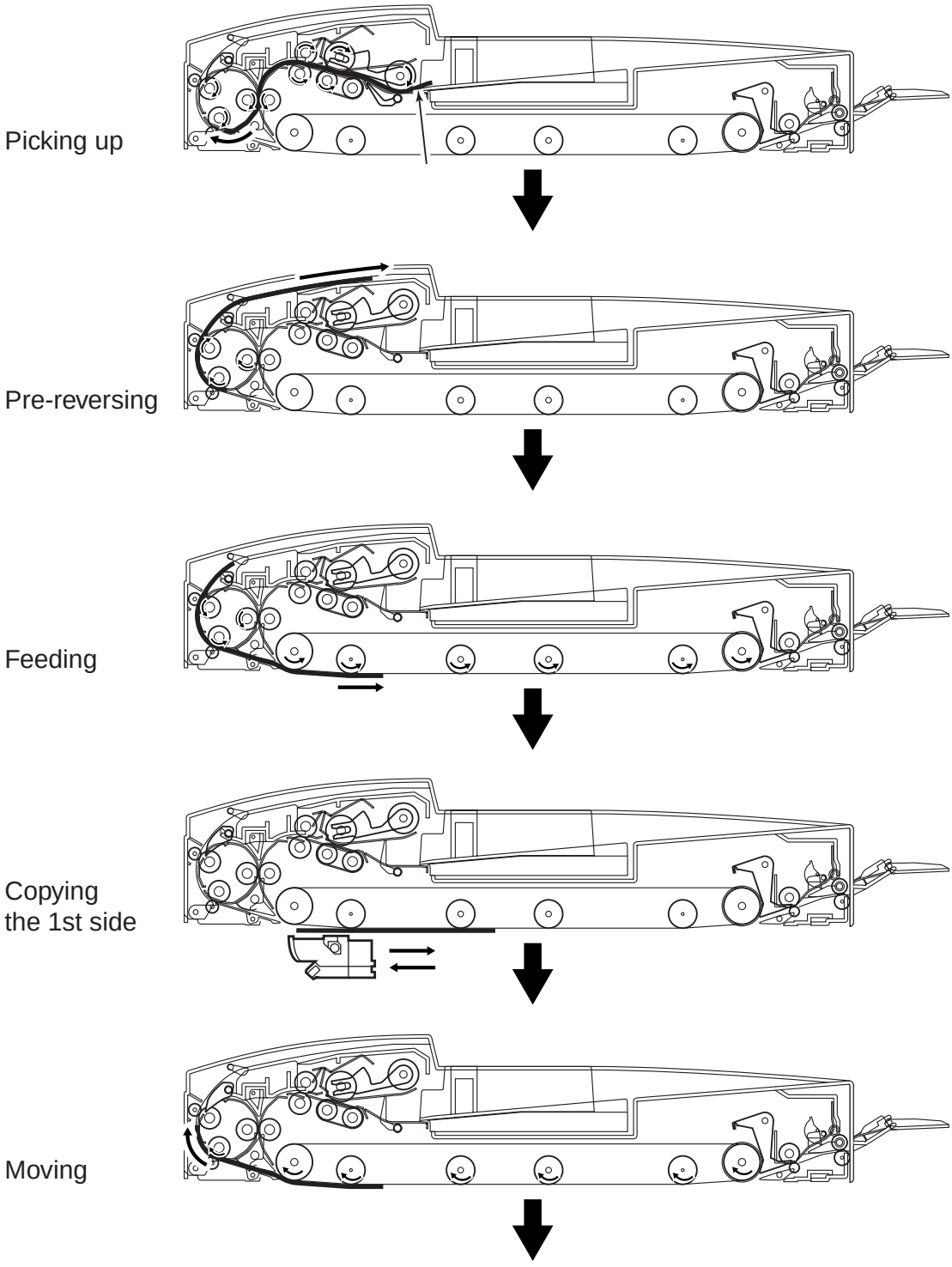
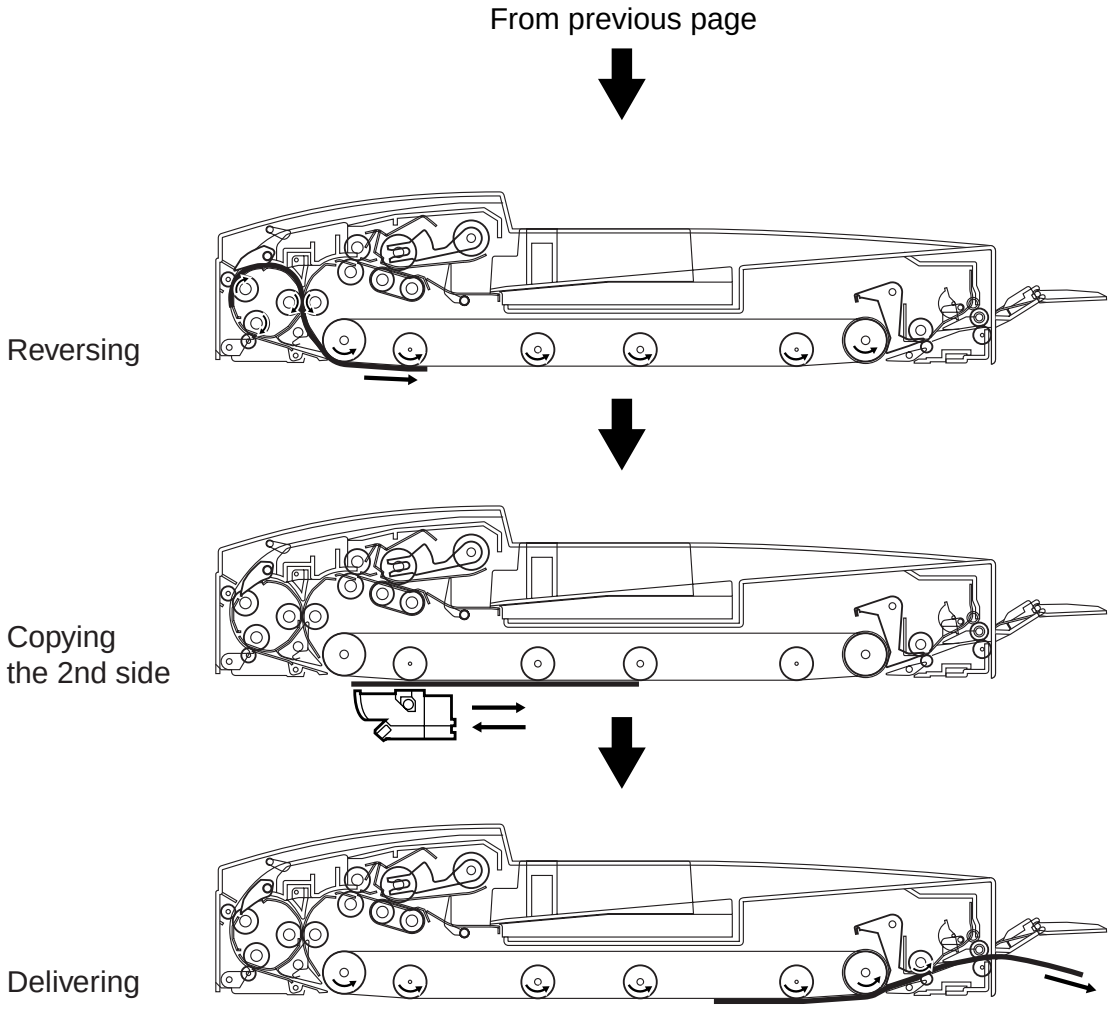
2.2.3 Pre-Reversal/Reversal/Delivery (small-size original)

The following is an outline of the flow of originals:



F02-202-02a



F02-202-02b

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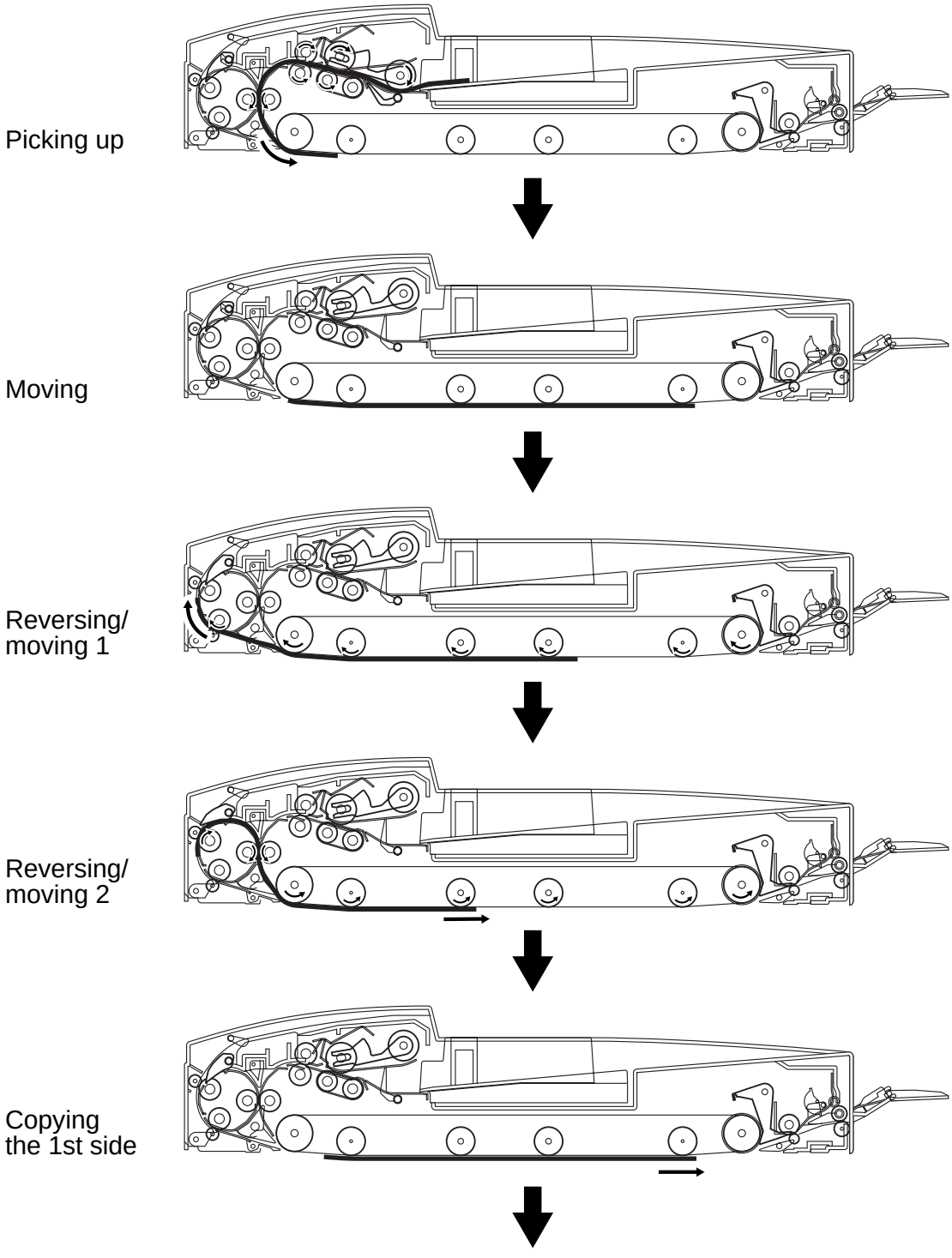
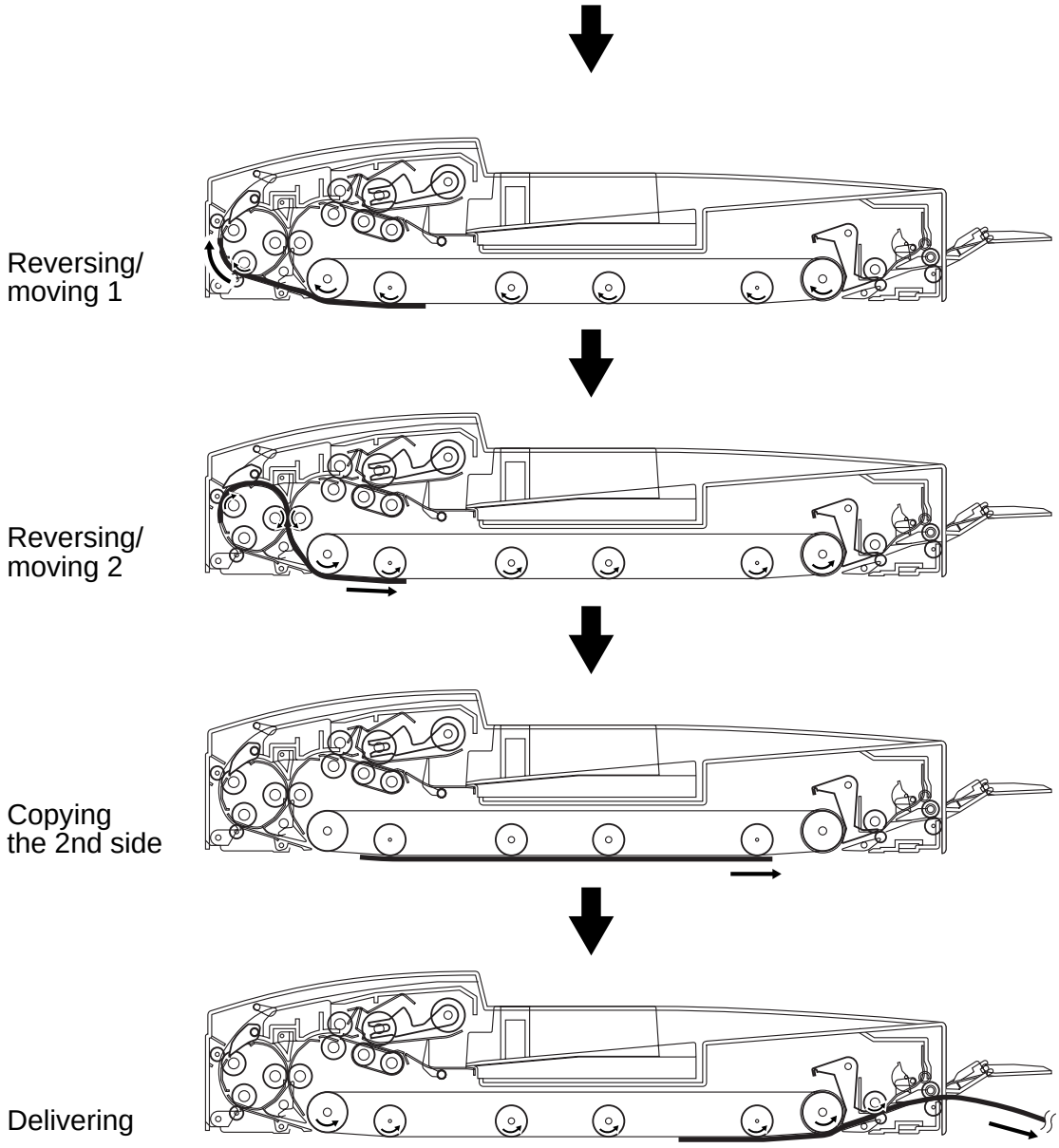
2.2.4 Reversal Pickup/Reversal/Delivery (large-size originals)

The following is an outline of the flow of originals:



F02-202-03a

From previous page



F02-202-03b

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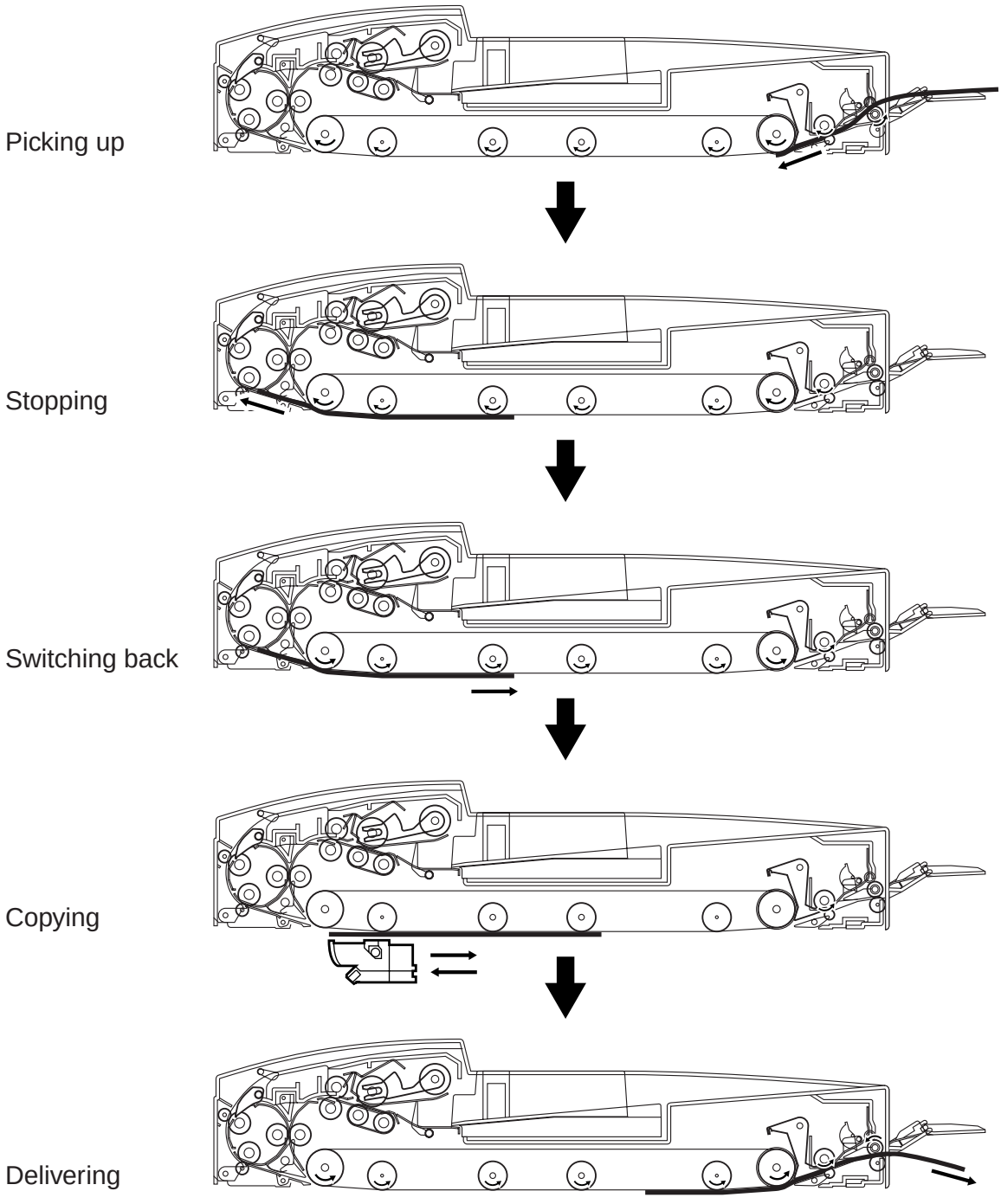
2.2.5 Manual Feeder Pickup/Delivery

The following is an outline of the flow of originals:



F02-202-04

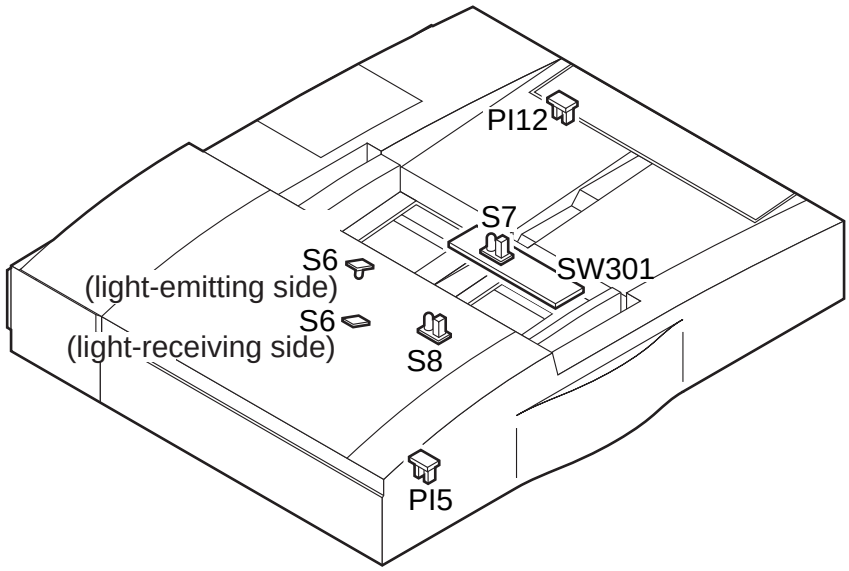
2.3 Detecting Originals

2.3.1 Outline

The DADF is equipped with the following five types of mechanisms of detection:

Item	Description	Sensor used (notation)
Presence/absence of an original	Identifies the presence/absence of an original on the original tray.	Original sensor (S6)
Original size 1	Identifies the size of the original placed in the original tray (as to being large-size or small-size).	Original trailing edge sensor (S7)
Original size 2	Identifies the size of an original on the move (default size).	Registration roller clock sensor (PI5) Pre-last original sensor (S8)
Pre-last original	Identifies the original in the original tray as being the last original or not.	
Original in manual feeder	Detects the presence/absence of an original in the manual feeder.	Manual feeder set sensor (PI12)

T02-203-01



F02-203-01

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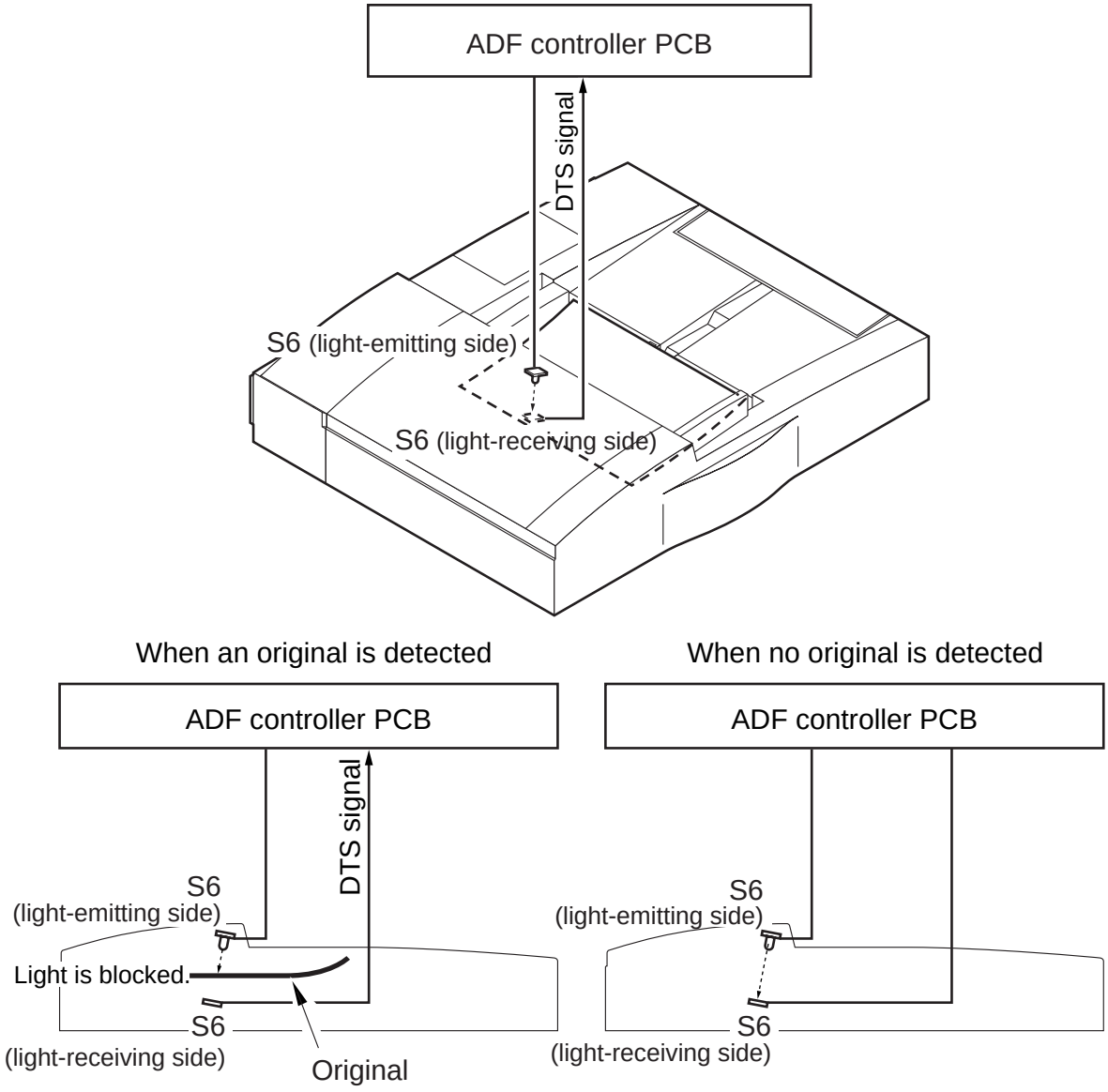
2.3.2 Detecting the Presence/Absence of an Original

The presence/absence of an original in the original tray is detected by the original sensor (S6).

When an original is placed on the original tray, the light from the light-emitting side of the original sensor is blocked, causing the light-receiving side of the original sensor to send the original detection signal (DTS) to the ADF controller PCB, which in response turns on the Original Set indicator.



F02-203-02

2.3.3 Original Size Detection 1

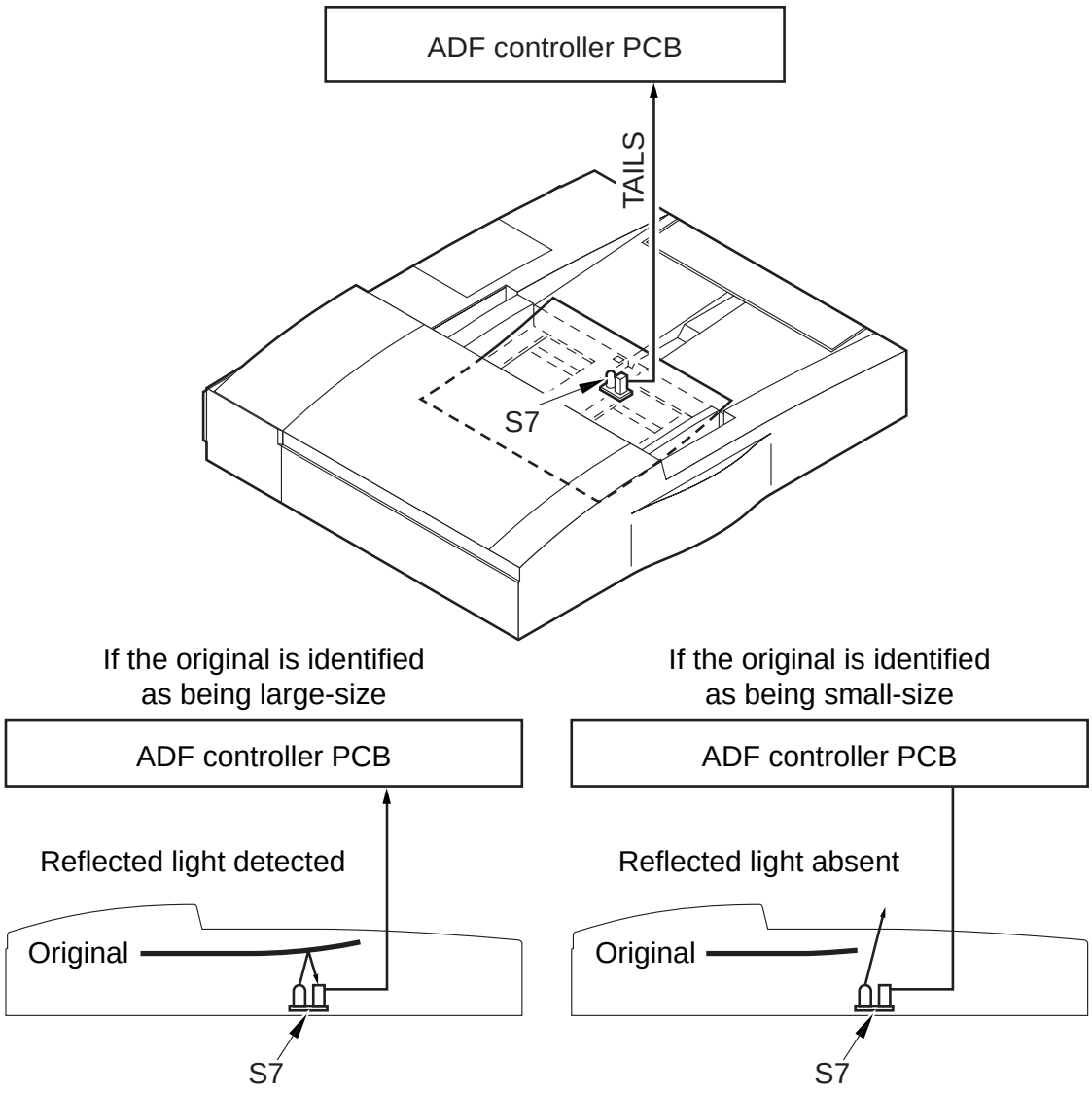
In original size detection 1, the original trailing edge sensor is used (S7), which is designed to identify the original in the original tray as being small-size or large-size.

When the original covers the original trailing edge sensor, the light from the LED of the original trailing edge sensor is reflected by the original to hit the phototransistor, at which time the DADF identifies the original as being large-size.

The DADF sends original size data (small-size or large-size) to the copier, which uses the data to determine the point at which the scanner is stopped for stream reading.

Small size:	A5, A4, B5, STMT, LTR
Large-size:	A4R, B5R, A3, B4, LTRR, LGL, 279.4x431.8 mm (11"x17")

T02-203-02



F02-203-03

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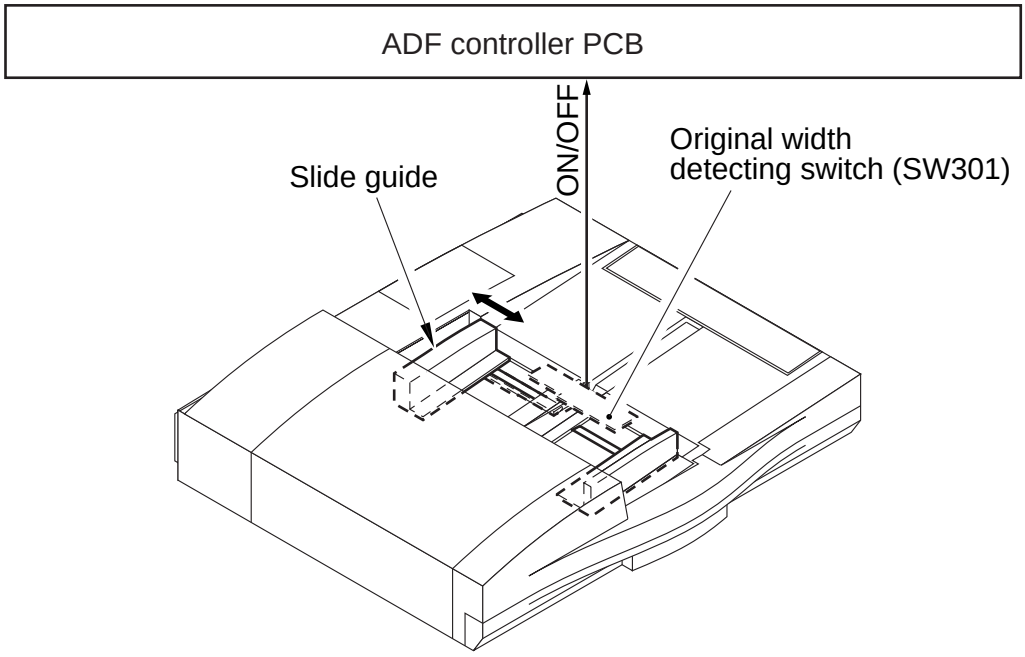
2.3.4 Original Size Detection 2

a. Outline

In original size detection 2, the original width detecting switch (SW301) and the registration roller clock sensor (PI5) are used to identify a default size.

The original width detecting switch is designed to find out the width of originals. As many as five contact plates (SSW0 through 4) are in contact with the original width detecting switch, operating in keeping with the slide guide. The state (ON or OFF) of each contact plate is communicated to the ADF controller PCB, which uses the input to determine the width of the original.

The following table shows the states of the contact plates in relation to default sizes; the states other than those indicated are assumed to indicate the presence of an original which is not of a default size.



F02-203-04

Default size	SSW0	SSW1	SSW2	SSW3	SSW4
A5, A4R	ON	ON	OFF	ON	ON
	ON	OFF	OFF	ON	ON
A4, A3	ON	OFF	OFF	ON	OFF
	ON	OFF	OFF	OFF	OFF
B5R	ON	OFF	OFF	OFF	ON
B5, B4	ON	OFF	ON	OFF	ON
	ON	OFF	ON	OFF	OFF
STMT, LTRR, LGL	ON	ON	ON	OFF	ON
	ON	ON	OFF	OFF	ON
LTR, 279.4 x 431.8mm (11" x 17")	ON	ON	OFF	OFF	OFF
	ON	ON	ON	OFF	OFF

T02-203-03 (States of Switches)

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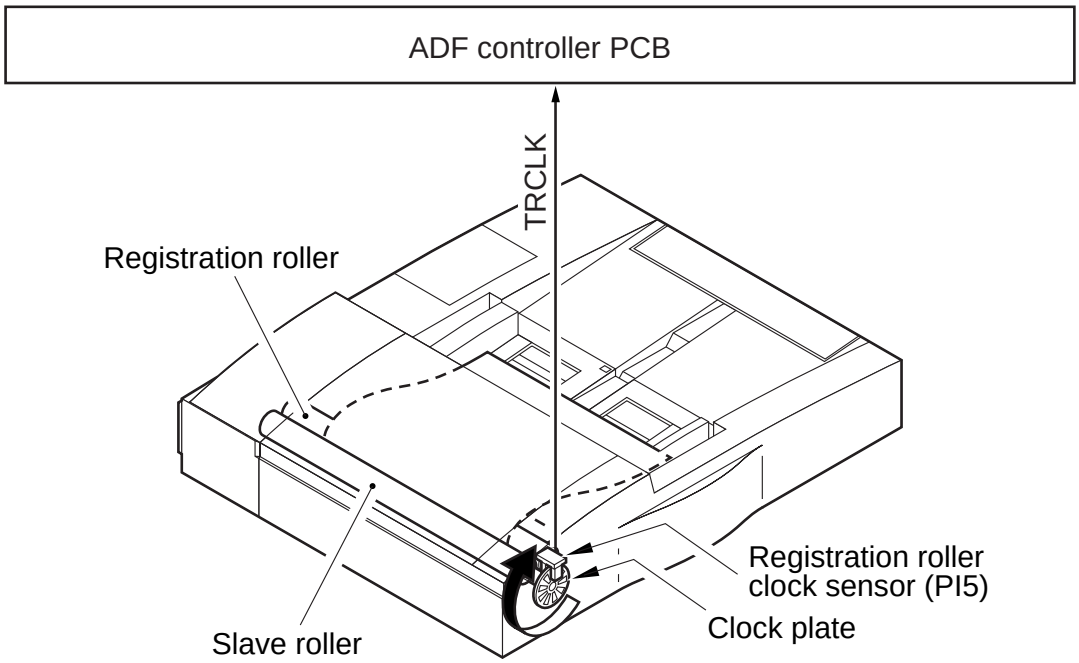
The registration roller clock sensor (PI5) is used to measure the length of originals with reference to the revolutions made by the clock plate mounted to the slave roller of the registration roller. Based on the revolutions of the lock plate, the ADF controller PCB identifies the length of the original in question (in feeding direction).



F02-203-05

The DADF uses the data on the width and the length of the original obtained by original detection 2 to identify a default size, and sends the result to the copier. In response, the copier selects the appropriate copy paper size to suit the identified size of the original.

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The following tables show the default sizes in relation to the sizes detected by the DADF:

A- and A/B-Configuration (unit: mm)

Default size	Original length	Original width
B5R	237 to 297	177 to 187
A5	129 to 189	205 to 213
A4R	277 to 317	
FOOLSCAP	317 to 370	
B5	162 to 222	252 to 262
B4	344 to 404	
COMPUTER paper	361 to 421	274.4 to 284.4
A4	190 to 250	292 to 302
A3	400 to 460	

A size outside of the above ranges will be identified as a non-default size.

T02-203-04

Inch-Configuration (unit: mm)

Default size	Original length	Original width
STMT	120 to 180	213 to 220.9
LTRR	259 to 309	
FOOLSCAP	310 to 343	
LGL	343 to 396	
LTR	196 to 256	274.4 to 284.4
COMPUTER paper	361 to 411	
279.4 x 431.8 (11" x 17")	412 to 472	

A size outside of the above ranges will be identified as a non-default size.

T02-203-05

Inch/A- and Inch/AB-Configuration (unit: mm)

Default size	Original length	Original width
B5R	237 to 297	170 to 187
A5	129 to 189	205 to 213
A4R	277 to 337	
STMT	120 to 180	213 to 220.9
LTRR	259 to 309	
FOOLSCAP	317 to 343	
LGL	343 to 396	
B5	162 to 222	252 to 262
B4	344 to 404	
LTR	196 to 256	274.4 to 284.4
COMPUTER paper	361 to 411	
279.4 x 431.8 (11" x 17")	412 to 472	
A4	190 to 250	292 to 302
A3	400 to 460	

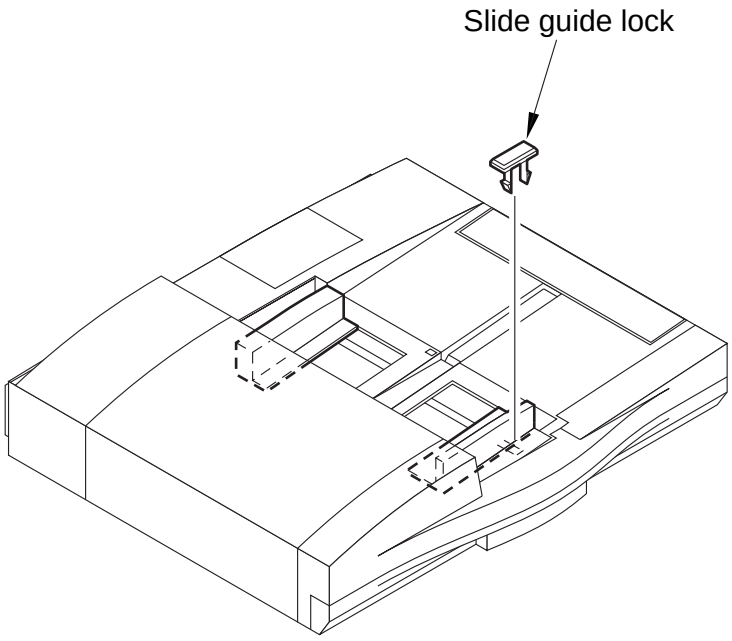
A size outside of the above ranges will be identified as a non-default size.

T02-203-06

b.Slide Guide Lock

The DADF is equipped with a slide guide lock so that the slide guide will not slide beyond the width of an A4/A3 sheet.

To use an original wider than 297 mm, remove the slide guide lock (up to 305 mm; however, the feeding length must be 432 mm or less).



F02-203-06

Be sure to adjust the slide guide to suit the original size when making copies. Otherwise, the original is likely to move askew.

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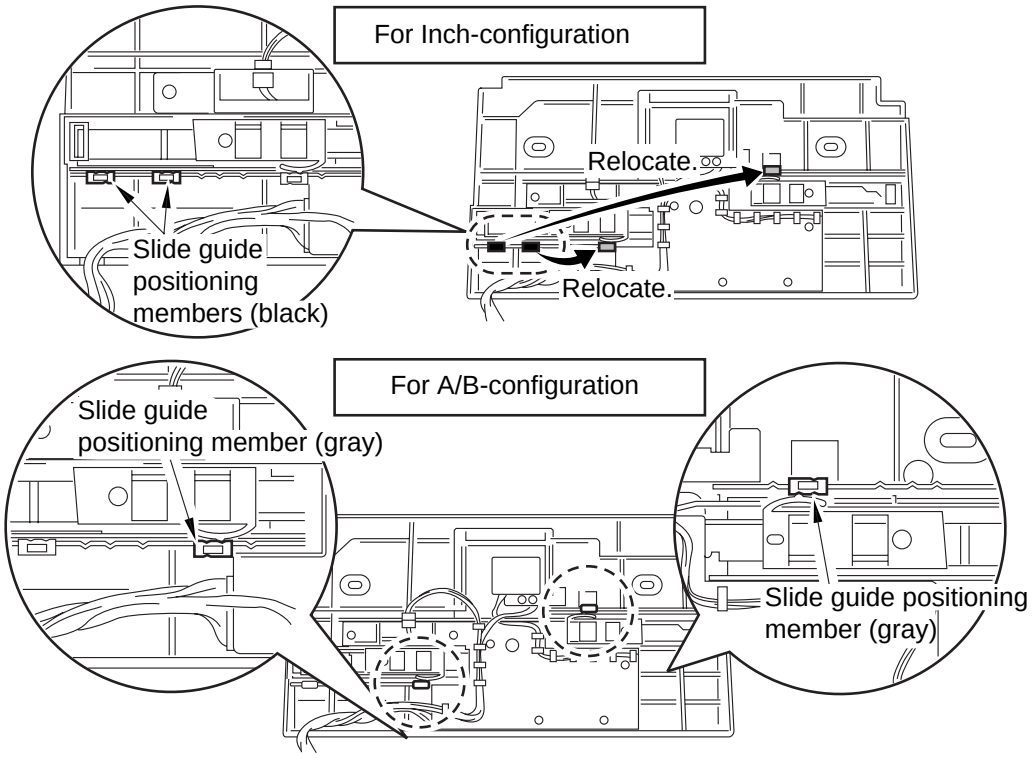
c. Slide Guide Positioning Member

The rail of the slide guide is provided with notches to make sure that the slide guide stops to suit a specific default original size. Some of these points representing differing paper sizes, however, are close enough to allow the slide guide to be set at the wrong point.

To prevent wrong positioning of the slide guide, the DADF comes with two types of slide guide positioning members; when fitted correctly, the positioning members will make sure that the slide guide will stop at the correct point.

Color of slide guide positioning member	Stop position of slide guide	
	Side with 1 notch	Side with 2 notches
Gray (for A/B-configuration)	A4R	A4R LTRR
Black (for Inch-configuration)	LTRR	LTRR A4R

T02-203-07



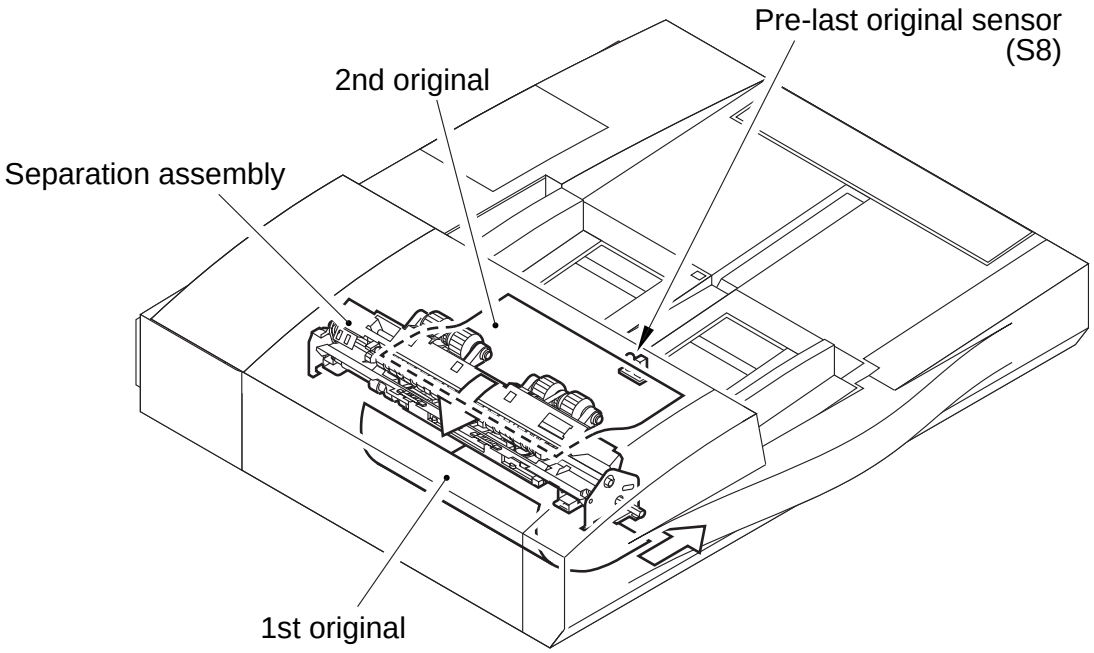
F02-203-07

2.3.5 Pre-Last Original Detection

Pre-last original detection makes use of the pre-last original sensor (S8). Detection is executed on small-size originals only. The DADF is designed to send the second original to the separation assembly after it has picked up the first original (small-side). At that time, if no original covers the pre-last original sensor (S8), the dada will assume that no original will follow, and communicates as such to the copier.

Small-size:	A5, A4, B5, STMT, LTR
Large-size:	A4R, B5R, B4, LTRR, LGL, 279.4x431.8 mm (11"x17")

F02-203-08



F02-203-08

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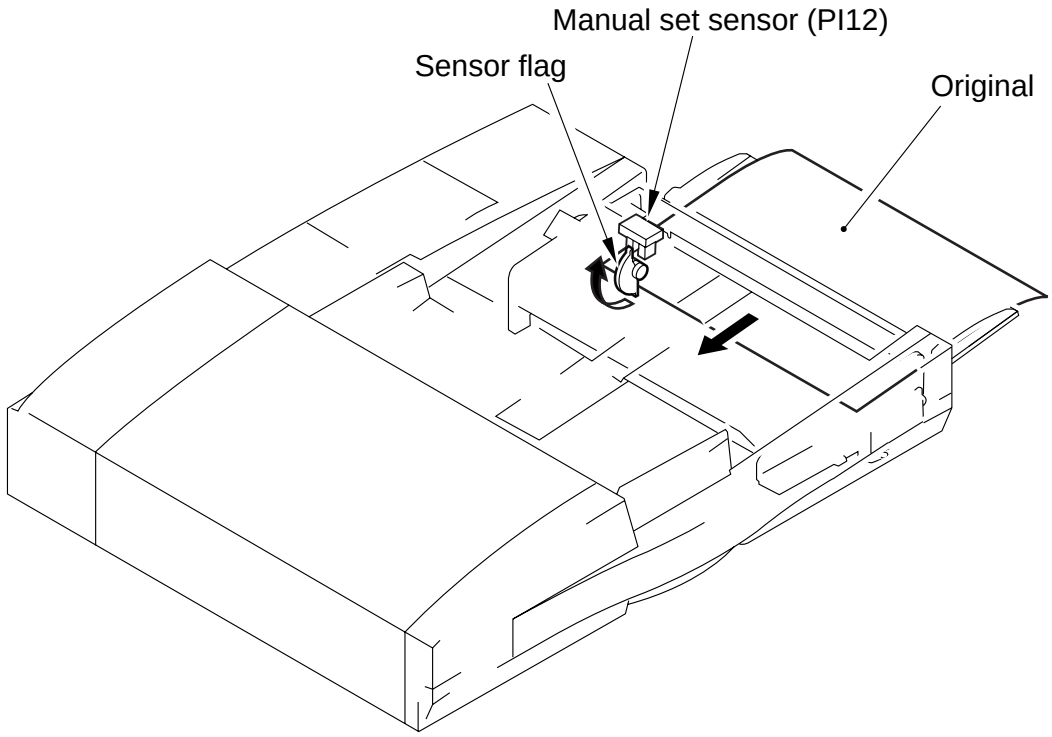
2.3.6 Detecting the Presence/Absence of an Original in the Manual Feeder

The presence/absence of an original in the manual feeder is detected using the manual set sensor (PI12).

When an original is placed in the manual feeder, the original pushes the sensor flag, causing the sensor flag to reach the sensor, enabling the DADF to assume the presence of an original in the manual feeder.

When the Start key is pressed, the DADF picks up the original from the manual feeder for copying.



F02-203-09

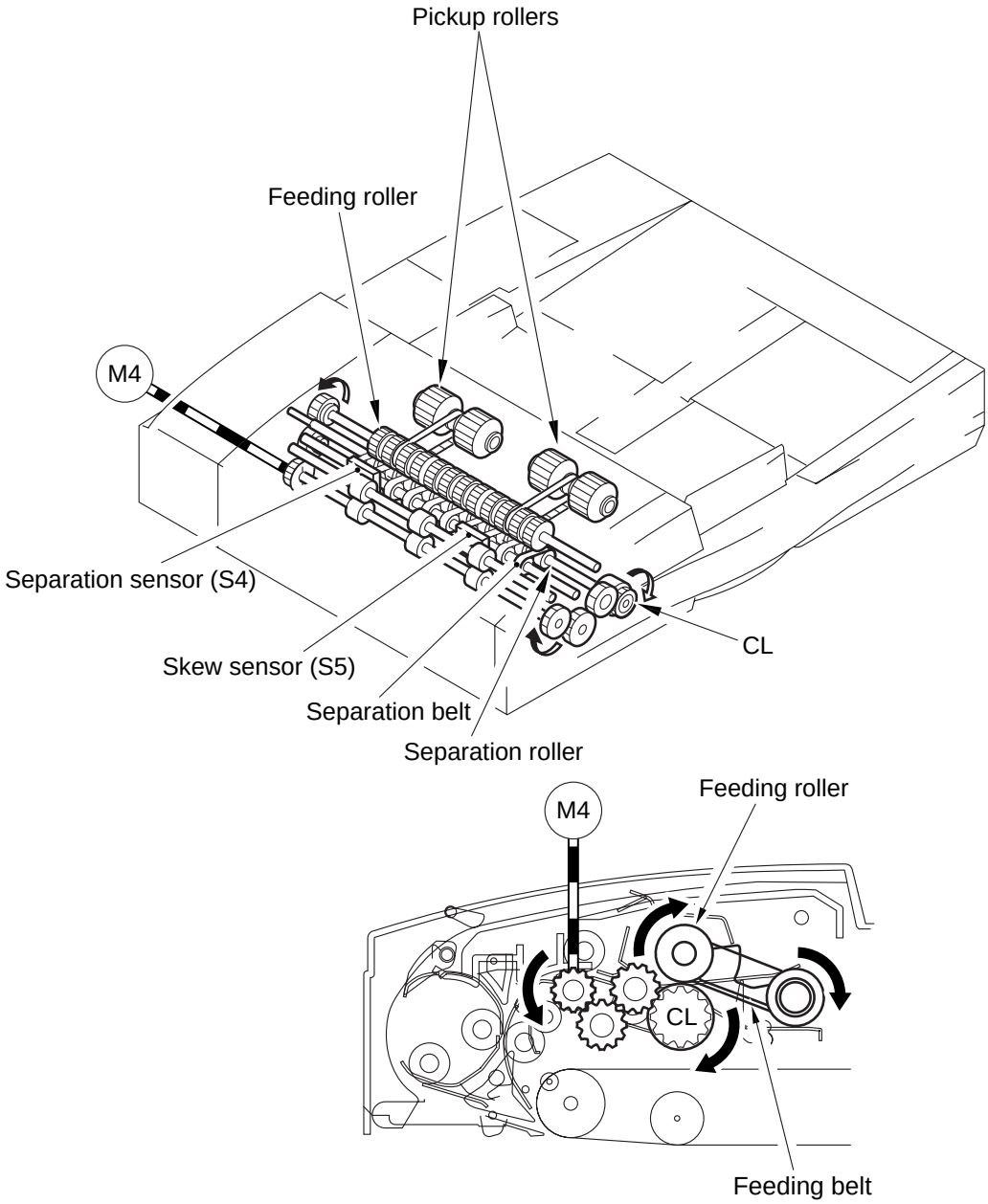
2.4 Picking Up and Separating Originals

2.4.1 Outline

The pickup roller unit is butted against the original, and the pickup roller is rotated to pick up an original. The pickup roller unit is moved up/down by the pickup motor (M3), and the pickup roller is rotated by the separation motor (M4) and the separation clutch (CL).

Originals are separated by the separation roller and the separation belt with the help of the feeding roller. The rollers and the belt are driven by the separation motor (M4) and the separation clutch (CL).

The separation assembly is equipped with a separation sensor (S4) and a skew sensor (S5) to monitor the movement of originals.



F02-204-01

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2.4.2 Moving Up/Down the Pickup Roller Unit

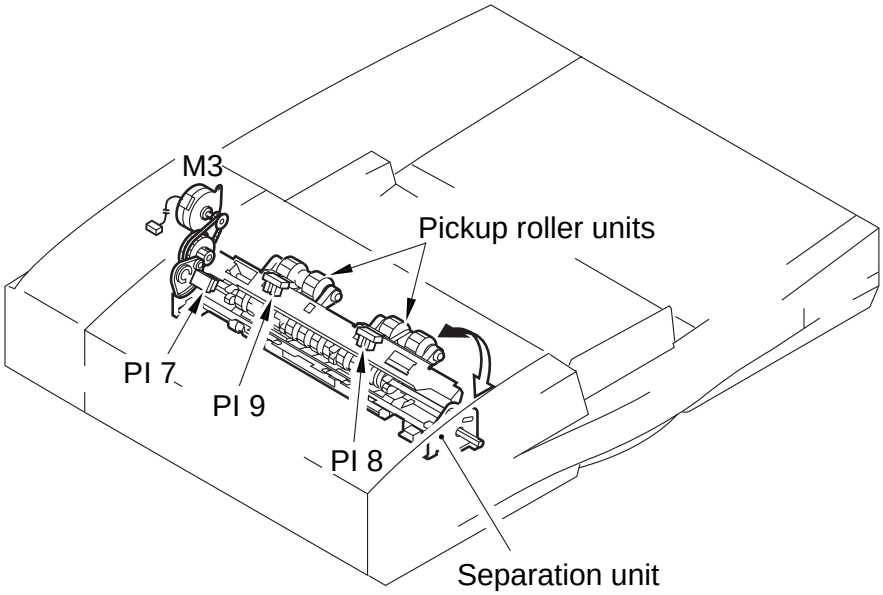
a. Outline

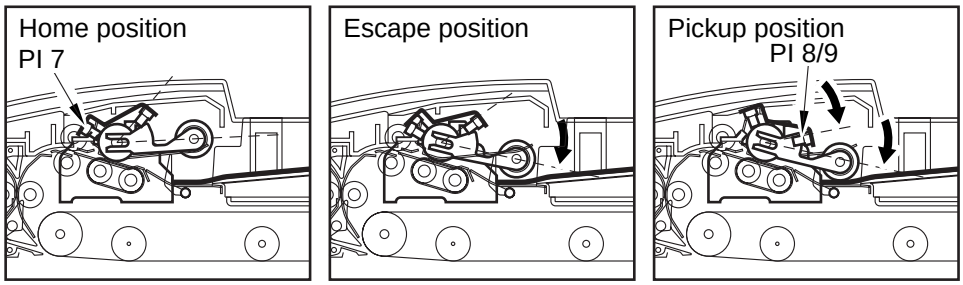
The DADF is equipped with two pickup roller units, each designed to move up/down between home position and the surface of the stack of originals. The pickup roller unit is moved up/down by the pickup motor (M3).

The pickup roller unit stops at either of the following positions; positioning is controlled by means of pulses from sensors and the pickup motor.

Stop position	Operation	Related sensor (notation)
Home position	Waits until the next copying operation.	Pickup roller home position sensor (PI7) Pickup height sensor 1/2 (PI8/9)
Wait position	Waits until the next pickup position	Pulse control of pickup motor (M3) Pickup height sensor 1/2 (PI8/9)
Pickup position	Picks up originals	Pulse control of pickup motor (M3)

T02-204-01



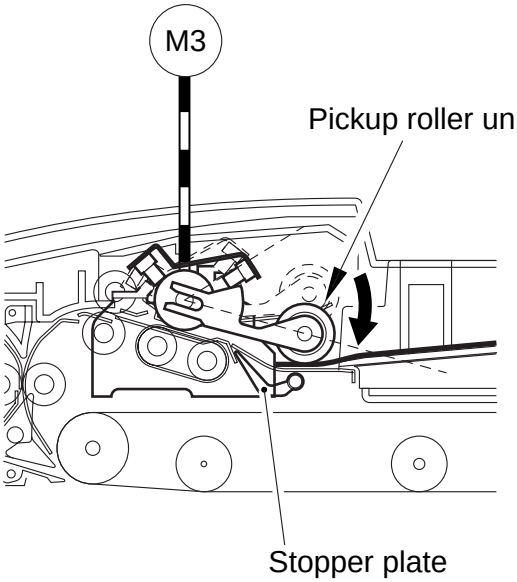


F02-204-02

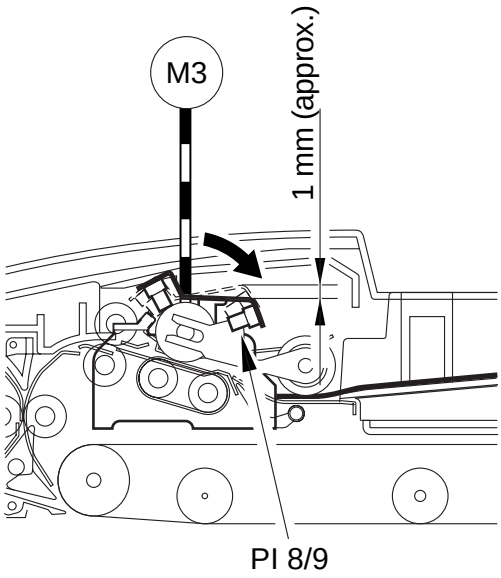
b.Movement

When the Start key on the copier is pressed, the DADF's stopper plate moves down and the pickup motor (M3) starts so that the pickup roller unit moves down to reach the stack of originals.

The pickup motor will stop when the pickup roller unit has reached the pickup height sensor 1 (PI8) and the pickup height sensor 2 (PI9) and then has moved down about 1 mm.

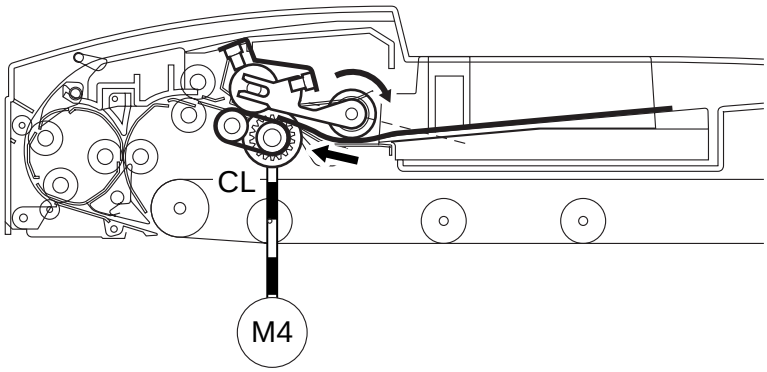


F02-204-03



F02-204-04

When the pickup roller unit stops to move down, the separation clutch (CL) and the separation motor (M3) start to move the 1st original to the separation assembly.



F02-204-05

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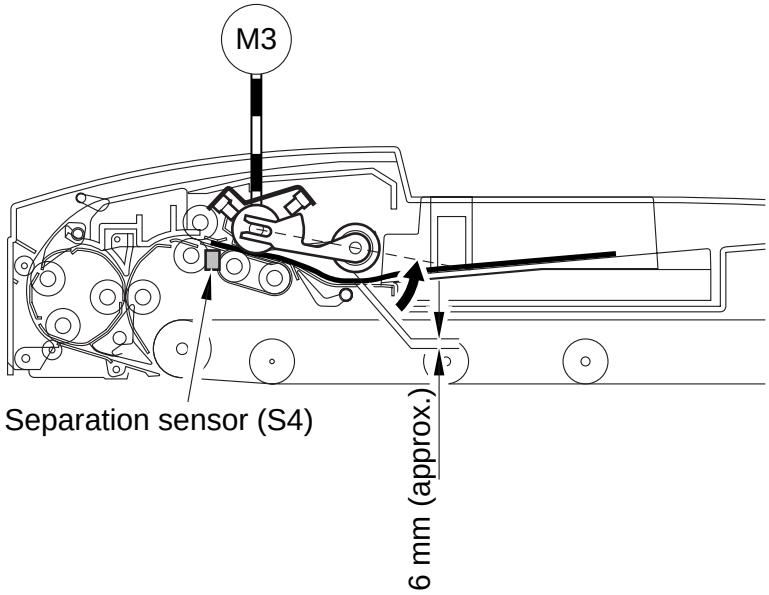
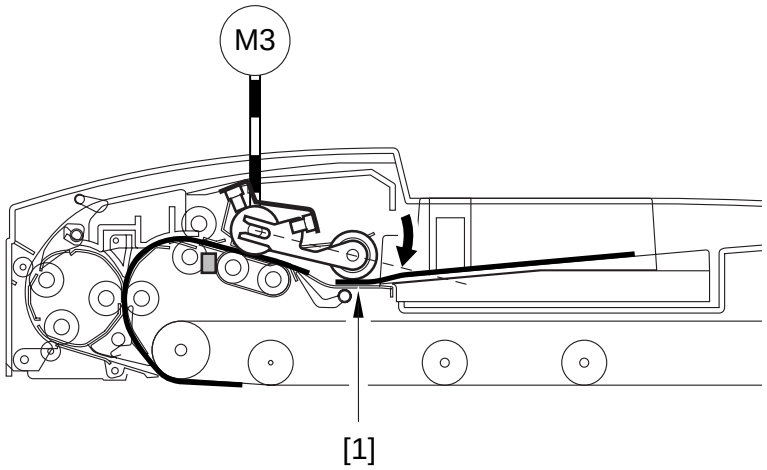
When the leading edge of the 1st original reaches the separation sensor (S4), the pickup motor (M3) starts to rotate to move the pickup roller unit from the surface of the stack of originals. The pickup roller unit stops about 6 mm from the surface of the stack of originals.



F02-204-06

When the trailing edge of the 1st original moves past the point of contact [1] of the pickup roller, the pickup roller unit once again moves down to the surface of the stack of originals to pick up the 2nd original.



F02-204-07

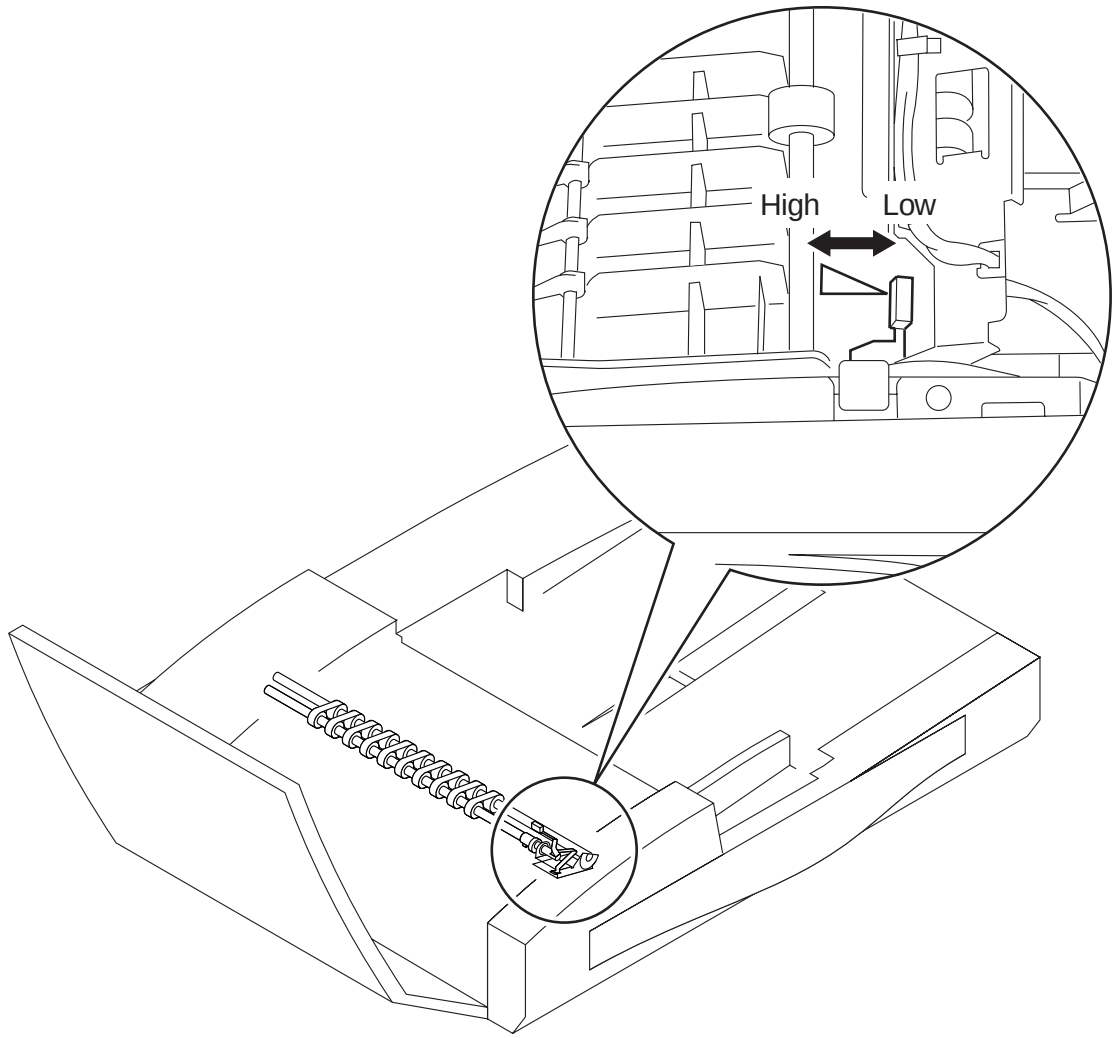
2.4.3 Switching the Separation Pressure

The DADF's separation assembly is equipped with a separation pressure switching mechanism which enables switching between two settings (low or high).

The separation pressure may be switched by operating the separation pressure lever located in front of the separation assembly. When the lever is operated, the position of the separation belt moves up or down to change the amount of overlap in relation to the feeding roller, thereby varying the separation pressure.

Memo

The separation pressure lever is set to "Low" at time of shipment from the factory.



F02-204-08

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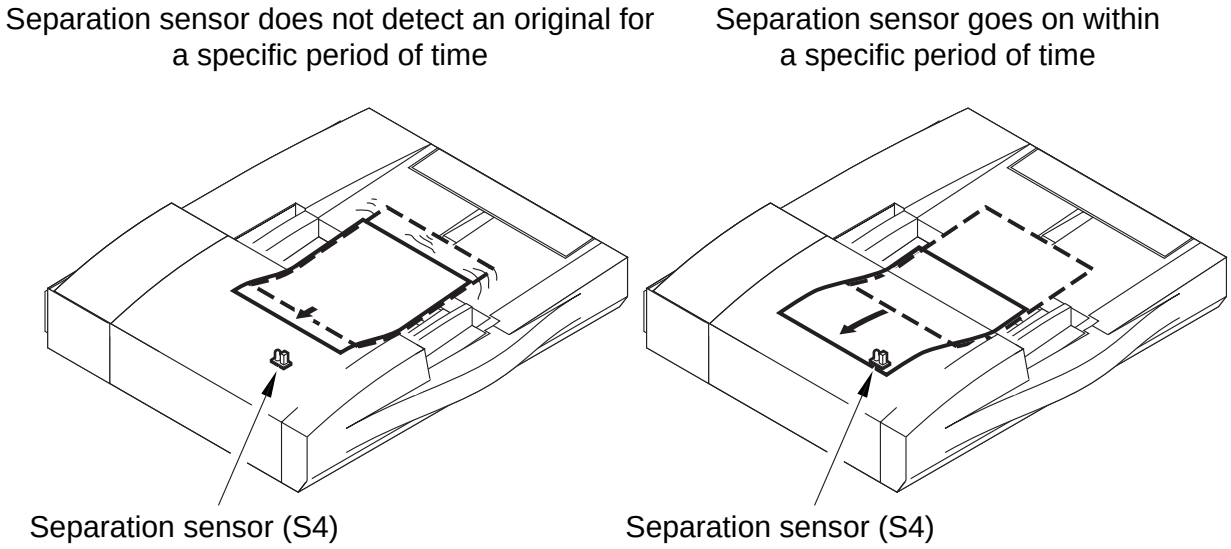
2.4.4 Separation Sensor (S4) and Skew Sensor (S5)

The paper path is equipped with a separation sensor (S4) and a skew sensor (S5) to monitor the movement of originals for the following:

Item	Sensor used (notation)	Alarm
Separation fault (delay)	Separation sensor (S4)	0031
Skew	Separation sensor (S4)	0011
	Skew sensor (S5)	

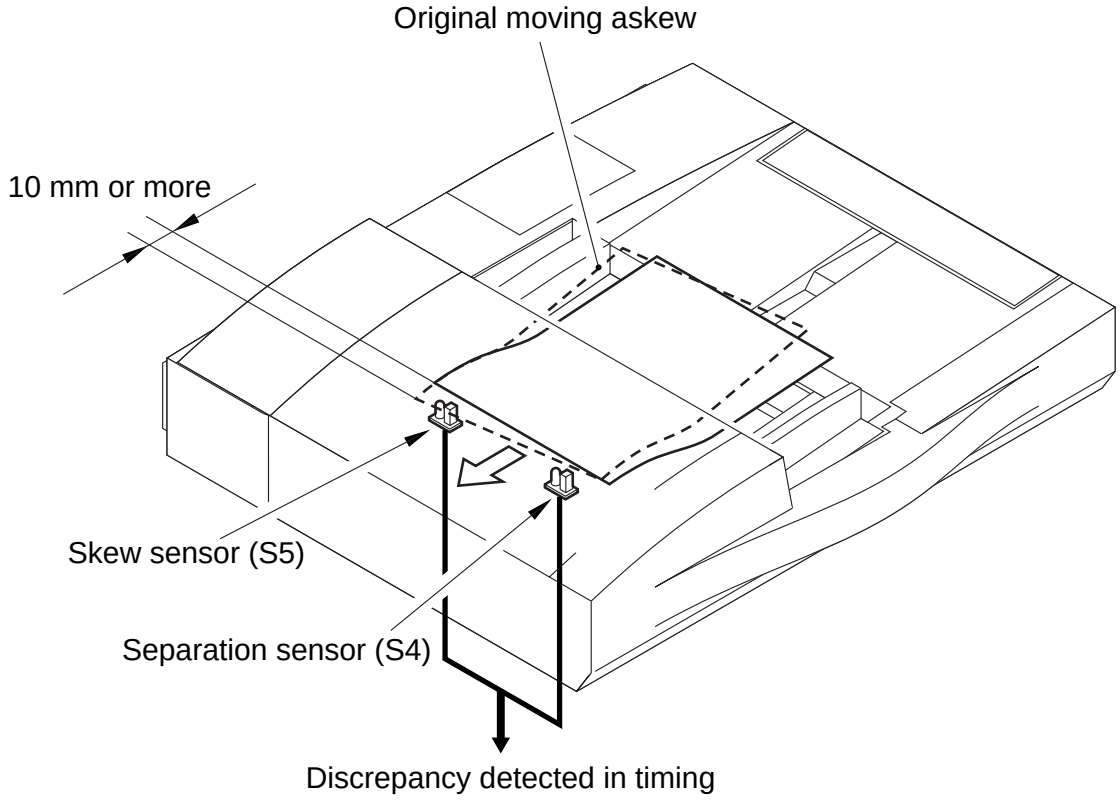
T02-204-02

A separation fault (delay) is identified if the separation sensor does not detect an original a specific period of time after the separation motor has started to rotate.


Separation sensor does not detect an original for a specific period of time
Separation sensor goes on within a specific period of time
Separation sensor (S4)
Separation sensor (S4)

F02-204-09

Both separation sensor and skew sensor are used to find out whether an original is moving askew. These two sensors are arranged in a single row in front-rear direction. An original is identified as moving askew if a discrepancy in timing is detected when it moves past these sensors. If the discrepancy is an equivalent of 10 mm, the DADF will assume that the original is moving askew, at which point it stops its operation to protect the original and causes the copier to indicate a jam message.



F02-204-10

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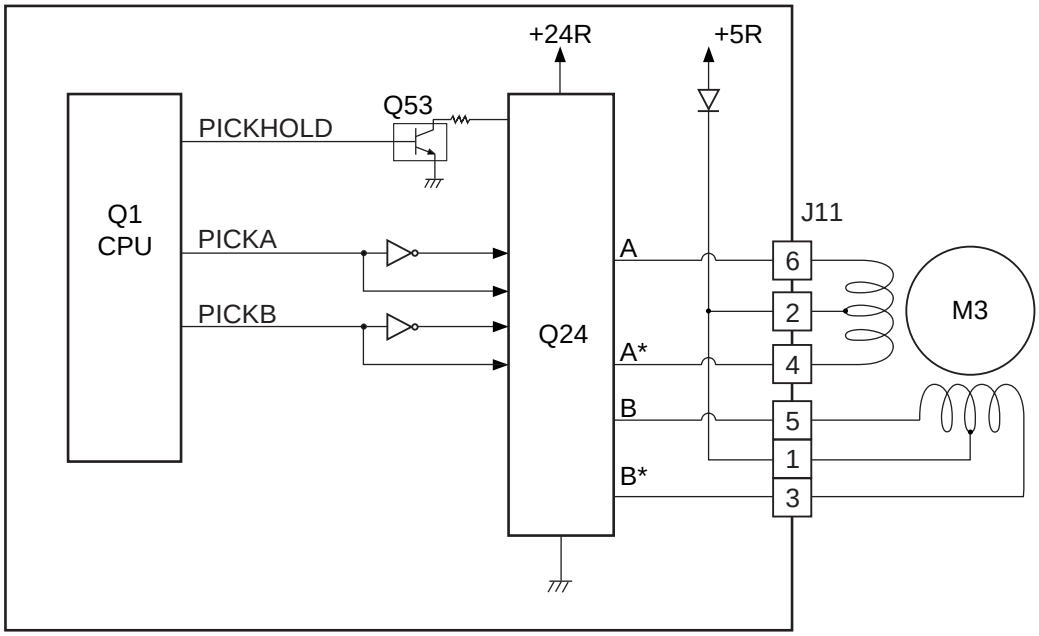
2.4.5 Controlling the Pickup Motor (M3)

The following is a control circuit of the pickup motor (M3). The pickup motor is a 4-phase stepping motor, and the circuit is used for the following:

- Turning on/off the motor.
- Controlling the direction of rotation of the motor.
- Keeping the motor on hold.



F02-204-11

The CPU (Q1) on the ADF controller causes the motor hold signal (PICKHOLD) to go '0', and applies +24R to drive the pickup motor. At the same time, the CPU sends the phase control signal (PICKA, PICKB) to the motor driver (Q24), which in response controls the output timing of pulse signals according to the phase signal it receives, switching the direction of rotation of the pickup motor.

If the CPU does not generate the phase control signal (PICKA, PICKB), the motor hold signal goes '1', applying +5R for retention to the pickup motor to keep the spindle of the motor on hold.

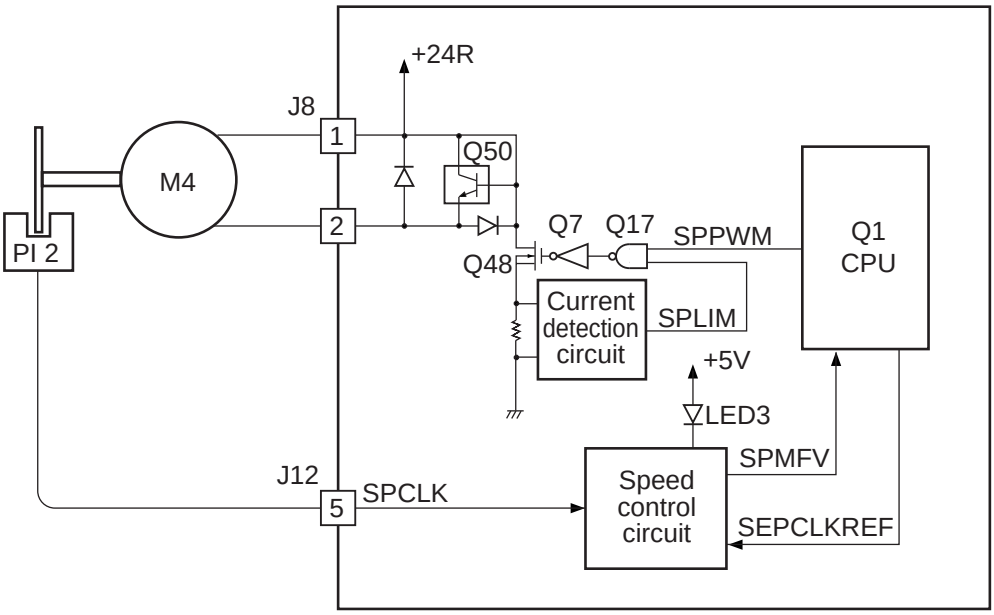
Error

E410
Indicates a fault in the pickup motor (M3).
Indicates a fault in the pickup motor height sensor (PI8).
Indicates a fault in the pickup roller height sensor (PI9).
Indicates a fault in the pickup roller home position sensor (PI7).
Indicates a fault in the ADF controller PCB.

2.4.6 Controlling the Separation Motor (M4)

The following is a control diagram of the separation motor (M4), which is a DC motor. The circuit is used for the following:

- Turning on/off the motor.
- Controlling the rotation speed of the motor.
- Controlling the overcurrent protective mechanism for the motor.



F02-204-12

When the CPU generates the motor speed rotation signal (SPPWM), the separation motor (M4) starts to rotate in a specific direction. The separation motor clock sensor (PI2) sends the rotation speed signal (SPCLK) of the separation motor to the speed control circuit, which in response compares it against the speed reference signal (SEPCLKREF), and sends the result (speed control signal; SPMFV) to the CPU.

In turn, the CPU varies the rotation speed signal to suit the speed control signal. LED3 remains on as long as the rotation speed of the motor is within a specific range, and goes off when the speed falls out of the range.

The current detection circuit monitors the current flowing to the separation motor at all times; if the current exceeds a specific level, it generates the separation motor stop signal (SPLIM) to stop the motor. If the separation motor stop signal is generated continuously, the CPU will assume a fault in the separation motor, and causes the copier to indicate an error code (E405) on its display.

Error

E405
Indicates a fault in the separation motor (M4).
Indicates a fault in the separation motor clock sensor (PI2).
Indicates a fault in the ADF controller PCB.

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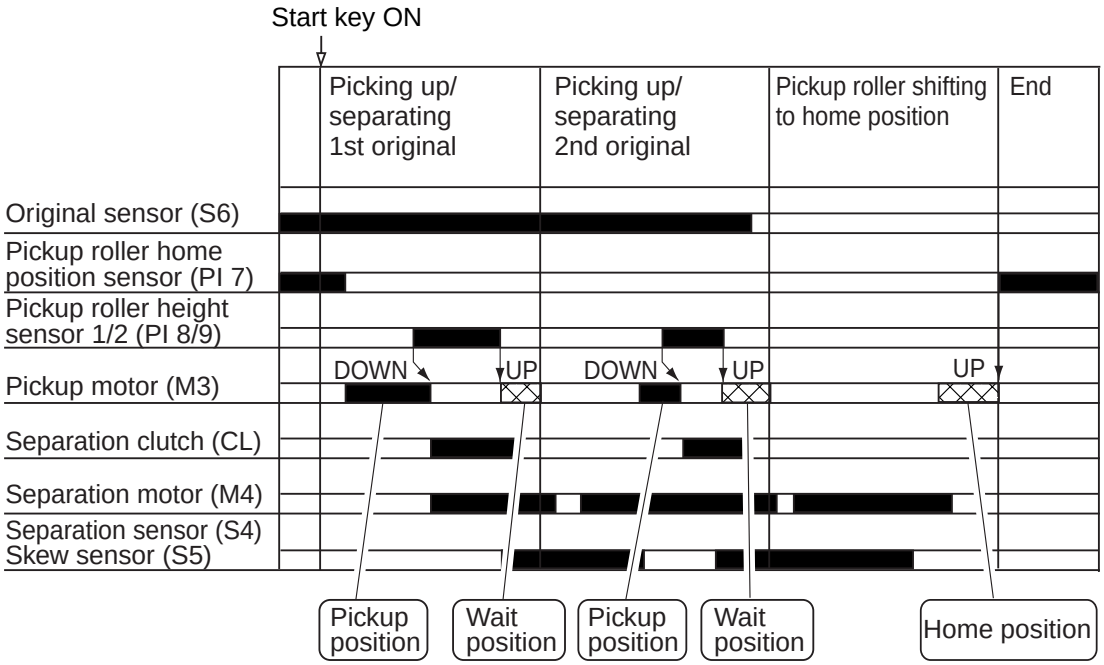
2.4.7 Sequence of Operations

Picking Up/Separation Originals

Feeding/Separation



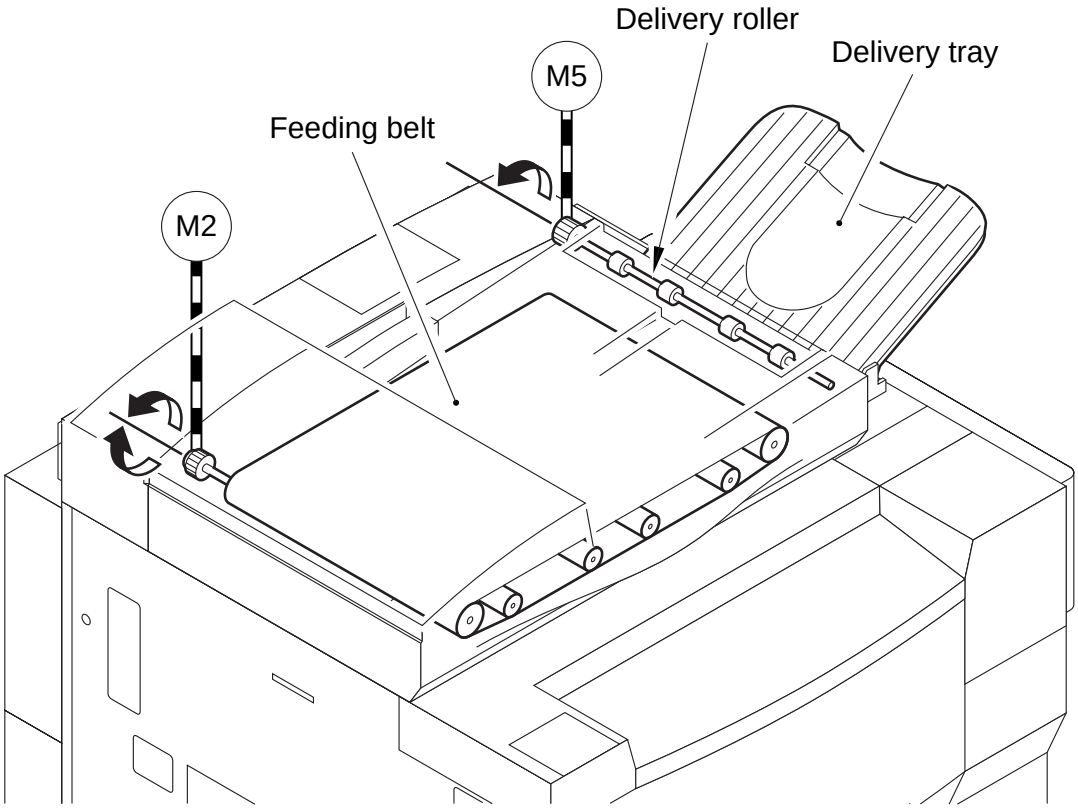
F02-204-13

2.5 Moving/Delivering Originals

2.5.1 Outline

Originals are moved by rotating the feeding belt by the belt motor (M2). Further, originals are moved either to the right or to the left depending on the operating mode in question.

Originals are delivered by rotating the delivery motor (M5). Originals are always delivered to the original delivery tray.



F02-205-01

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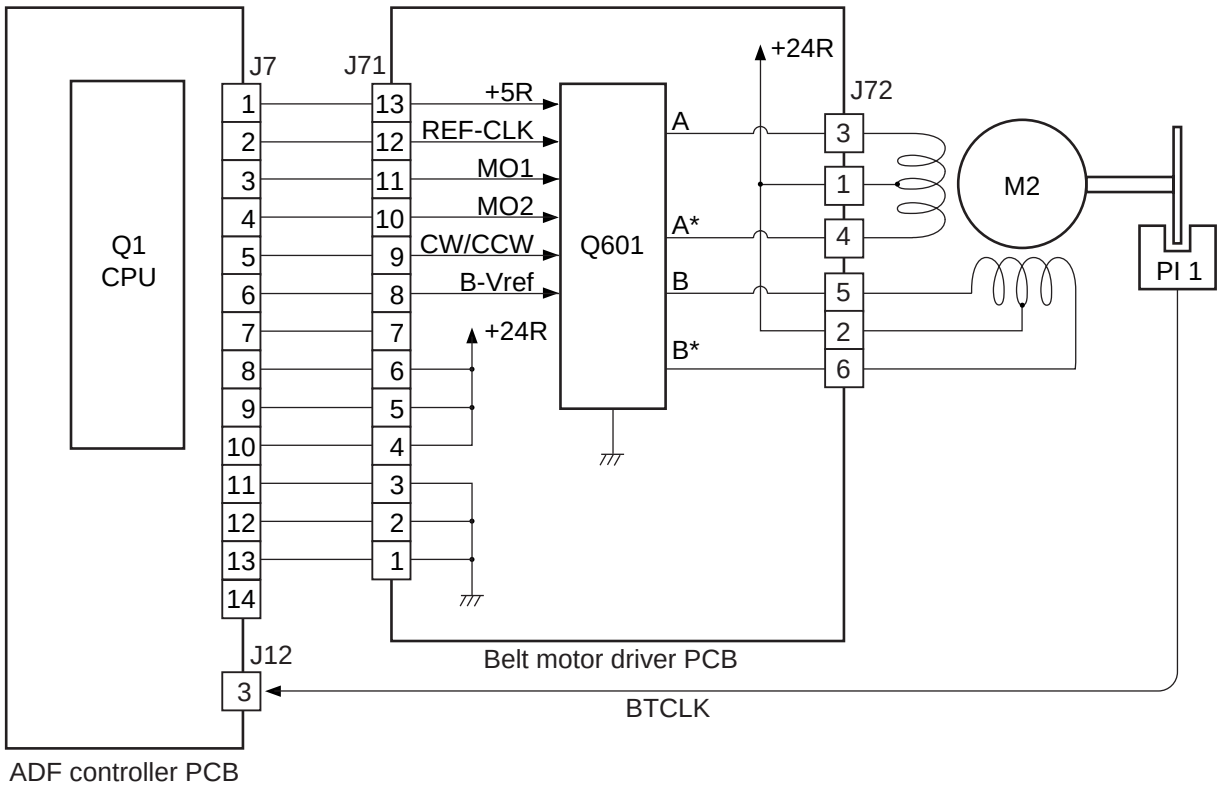
2.5.2 Controlling the Belt Motor (M2)

The following is a control diagram of the belt motor (M2). The belt motor is a 4-phase stepping motor, and the circuit is used for the following:

- Turning on/off the motor.
- Controlling the rotation direction of the motor.
- Controlling the rotation speed of the motor.



F02-205-02

The CPU (Q1) on the ADF controller PCB sends the motor control signal to the belt motor driver PCB. The reversal motor driver PCB serves to control the motor according to the input signal.

Signal	Function
M20A	Phase control (direction, speed of rotation)
M20A*	Phase control (direction, speed of rotation)
M20B	Phase control (direction, speed of rotation)
M20B*	Phase control (direction, speed of rotation)
B-Vref	Sets motor rotation torque.
BTCLK	Monitors operation of the motor, and sets belt stop position.

T02-205-01

Error

E402
Indicates a fault in the belt motor.
Indicates a fault in the belt motor clock sensor (PI1).
Indicates a fault in the ADF controller PCB.

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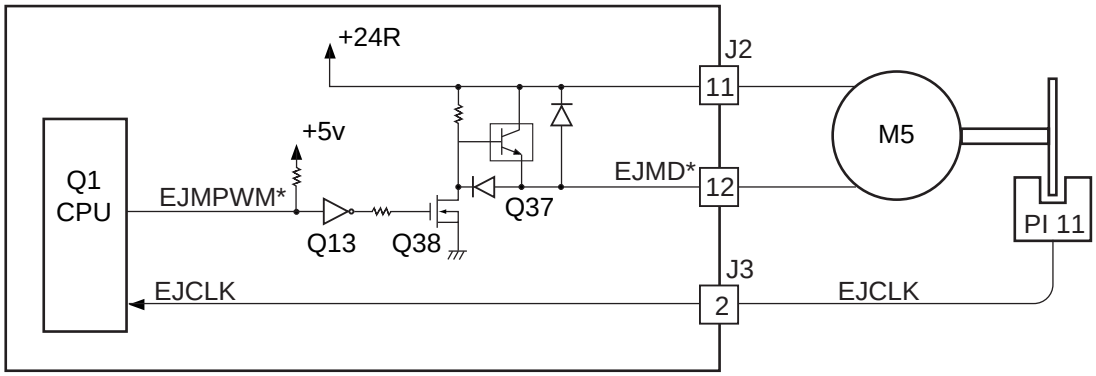
2.5.3 Controlling the Delivery Motor (M5)

The following is the control circuit of the delivery motor (M5). The delivery motor is a DC motor, and the circuit is used for the following:

- Turning on/off the motor.
- Controlling the rotation speed of the motor.



F02-205-03

The CPU (Q1) on the ADF controller PCB sends the motor rotation speed signal (EJMPWM*) to the drive control assembly, which in turn generates the motor drive signal (EJMD*) according to the input signal.

When the motor starts to rotate, the motor rotation signal (EJCLK) is generated. The CPU monitors the operation of the motor in reference to the motor rotation signal.

Signal	Function
EJMPWM*	Controls the motor rotation speed.
EJMD*	Controls the motor operation drive.
EJCLK	Monitors the motor operation.

T02-205-02

Error

E404
Indicates a fault in the delivery motor (M5).
Indicates a fault in the delivery motor clock sensor (PI11).
Indicates a fault in the ADF controller PCB.

-Related Adjustments-

Sensor and delivery motor adjustment
At time of replacing the delivery motor.

2.6 CW Pickup/Delivery

2.6.1 Outline

CW pickup/delivery is used in both fixed reading and stream reading.

Operation	Operation mode	Copying mode
CW pickup/delivery	Fixed reading	Single-sided original to single-sided copy (reproduction ratio: 201% to 400%)
		Single-sided original to double-sided copy (reproduction ratio: 201% to 400%)
	Stream reading	Single-sided original to single-sided copy (reproduction ratio: 25% to 200%)
		Single-sided original to double-sided copy (reproduction ratio: 25% to 200%)

T02-206-01

The DADF selects fixed reading for the following:
- The reproduction ratio is set to 201% or higher.
- It has identified the original as being of a non-default size.
- The copier prohibits stream reading mode (as selected in service mode).
- The copier has detected dirt on the copyboard glass.

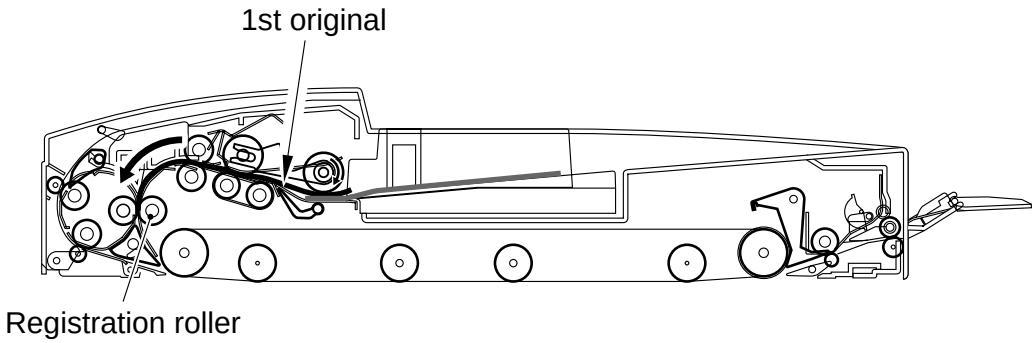
2.6.2 Fixed Reading

In fixed reading, the original is held on the copyboard glass while the copier's scanner is moved to make copies.

Its operation is as follows:

a. Small-Size, Single-Sided Original

1) The 1st original is picked up, and its leading edge is butted against the registration roller to remove the skew. (For details of pickup operation, see 2.4 "Picking Up/Separating Originals" on p. 2-26.)



F02-206-01

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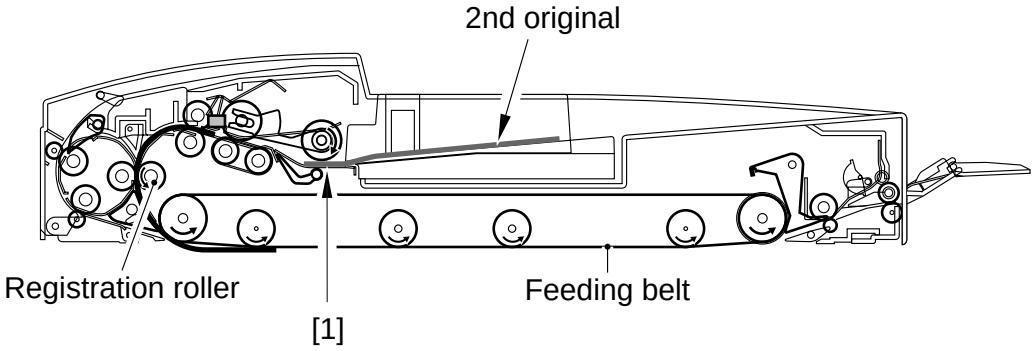
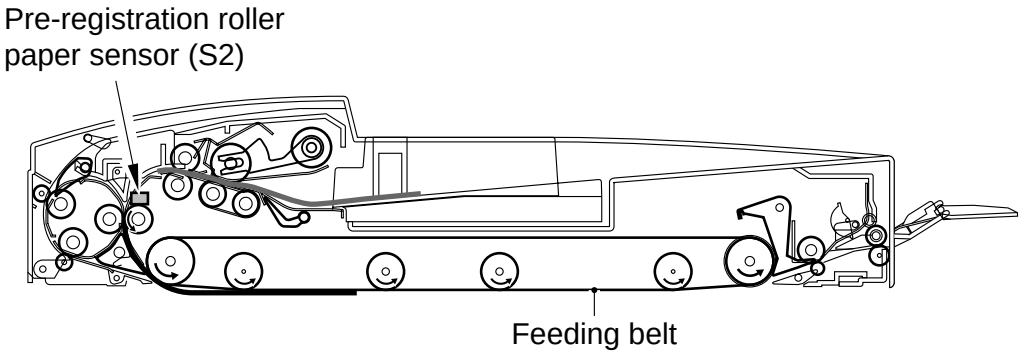
2) The registration roller and the feeding belt are rotated to move the 1st original.
When the trailing edge of the 1st original moves past the point of contact [1] of the pick roller, the 2nd original is picked up.



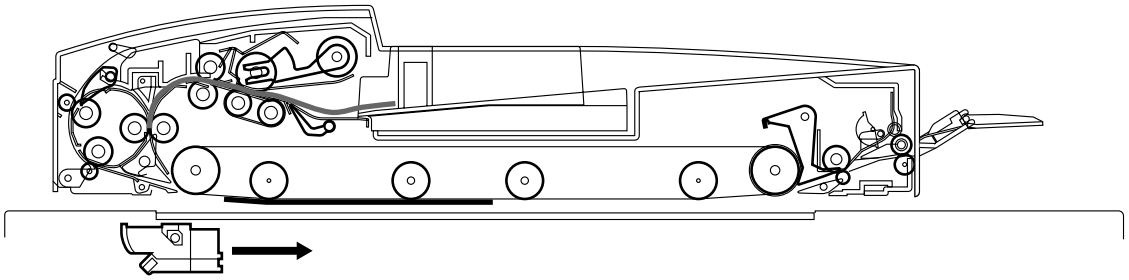
F02-206-02

3) The registration roller and the feeding belt are rotated to move the 1st original.
After its trailing edge moves past the pre-registration roller paper sensor (S2), the 1st original is moved by the feeding belt over a specific length to determine its top position.



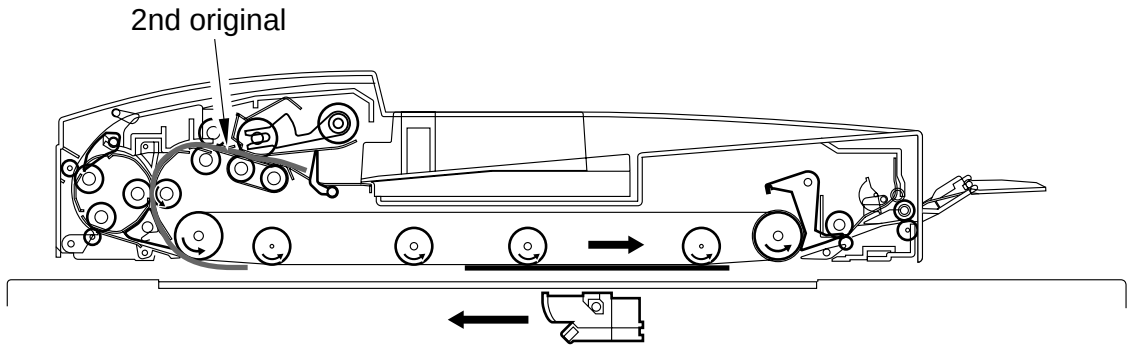
F02-206-03

4) The copier's scanner starts copying operation.



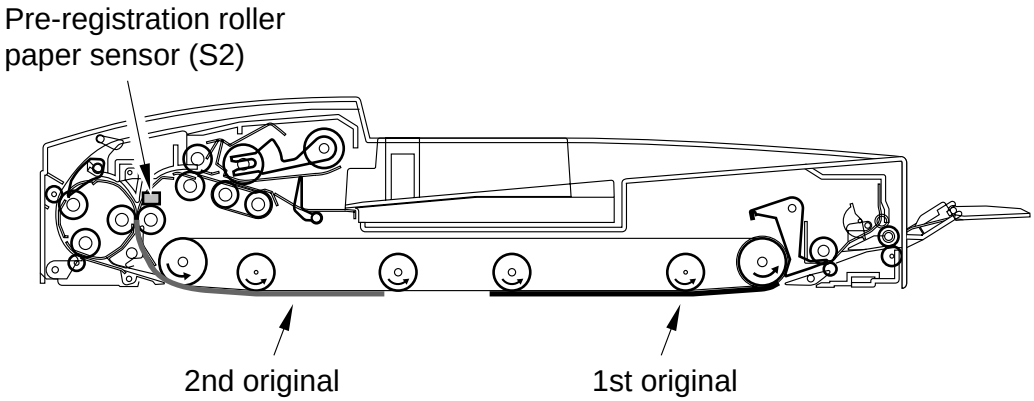
F02-206-04

5) The copier's scanner starts to move in reverse and the feeding belt is rotated to move the 1st original in the delivery direction.
At the same time, the registration roller is rotated to move the 2nd original.



F02-206-05

6) The 1st and the 2nd originals are moved by the feeding belt; when the trailing edge of the 2nd original has moved past the pre-registration roller paper sensor (S2), the feeding belt is rotated for a specific length to determine the stop position for the 2nd original.
The 1st original is moved in the delivery direction, and stopped on the copyboard glass.



F02-206-06

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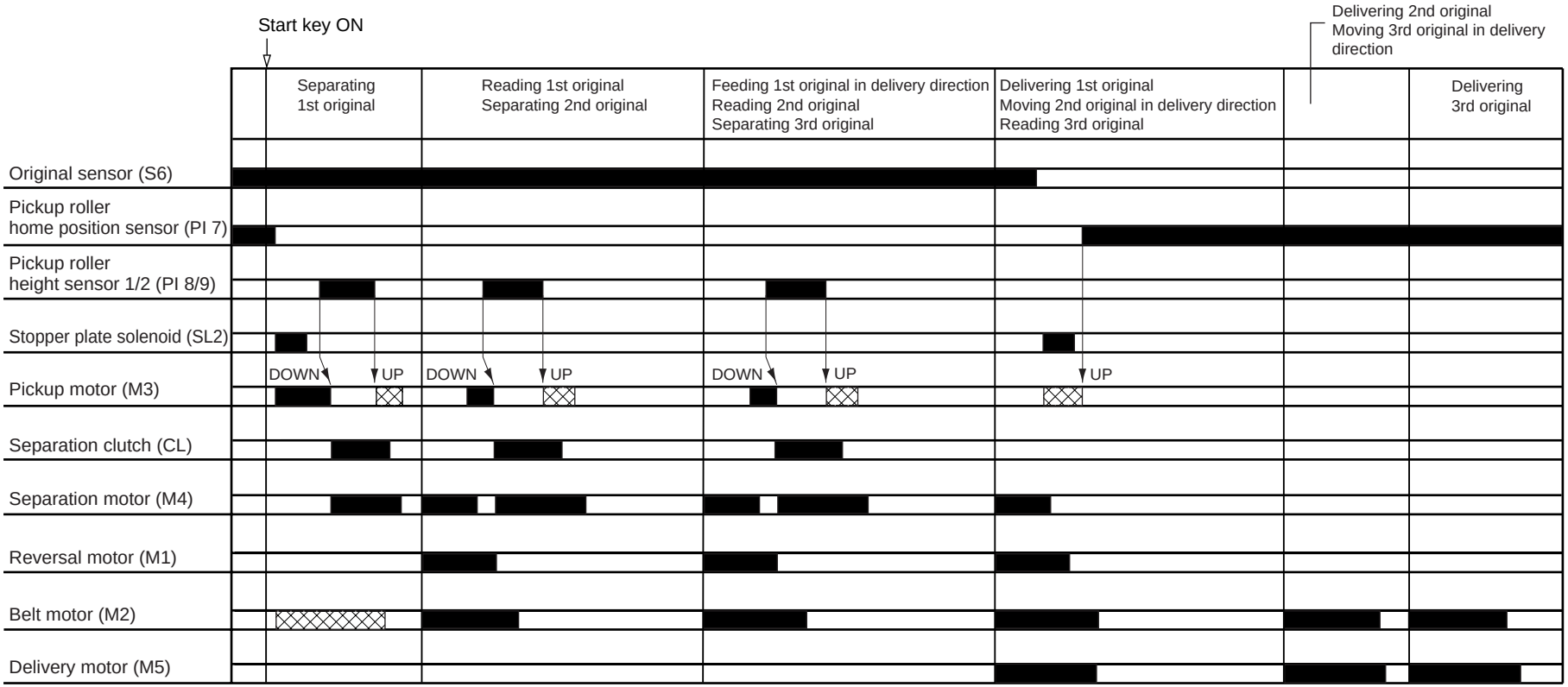
A4, Single-Sided, 3 Originals, Fixed Reading



F02-206-07

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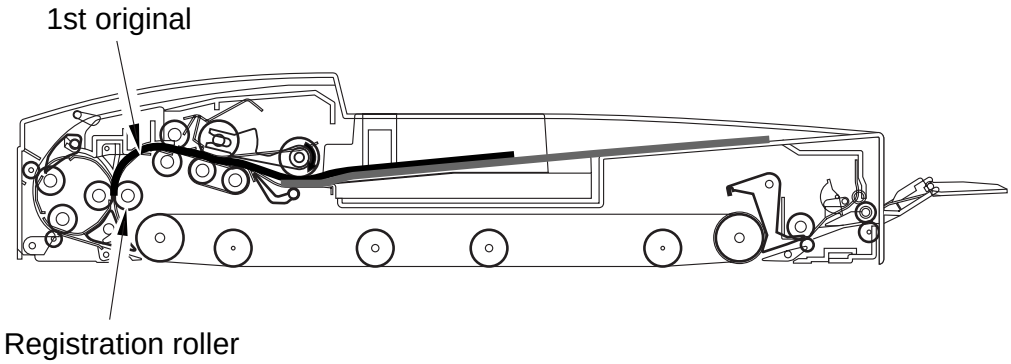
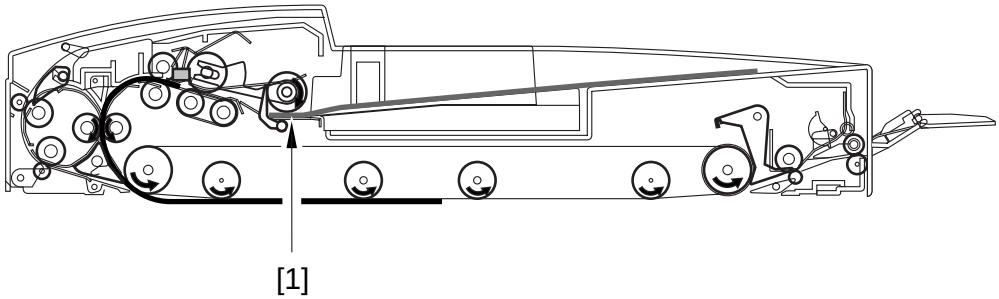
c.Large-Size, Single-Sided Original

1) The 1st original is picked up, and its leading edge is butted against the registration roller to remove the skew. (For details of pickup operation, see 2.4 “Picking Up/Separating Originals” on p. 2-26.)



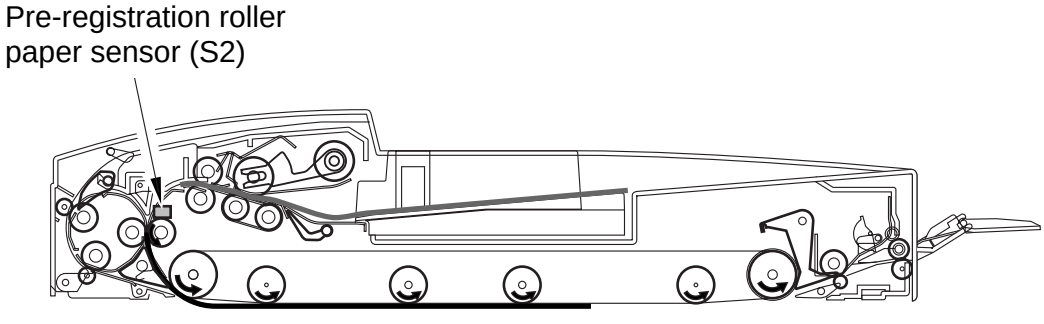
F02-206-08

2) The registration roller and the feeding belt are rotated to move the original.
When the trailing edge of the 1st original moves past the point of contact [1] of the pickup roller, the 2nd original is picked up.



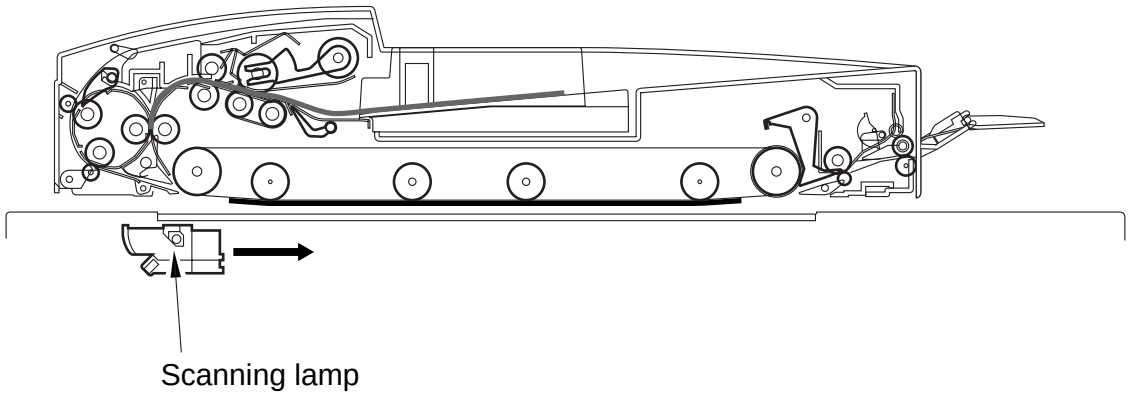
F02-206-09

3) The registration roller and the feeding belt are rotated to move the original.
The 1st original is moved by the feeding belt over a specific length after its trailing edge has moved past the pre-registration roller paper sensor (S2) to determine the original stop position.



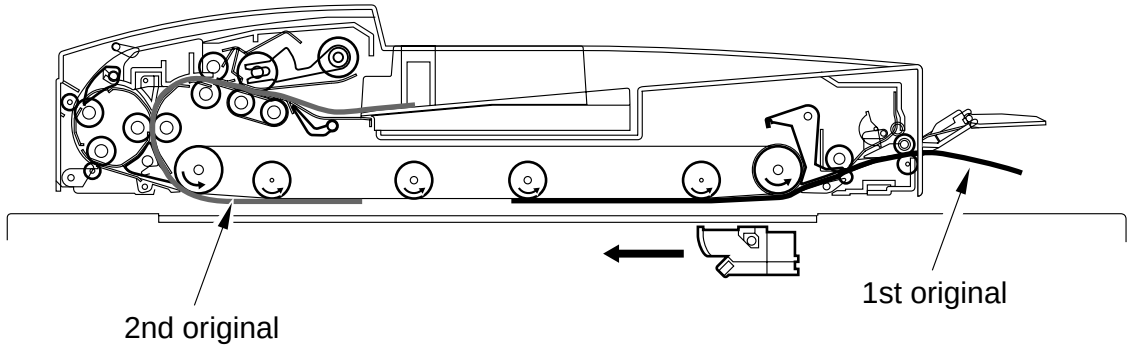
F02-206-10

4) The copier's scanner starts copying operation.



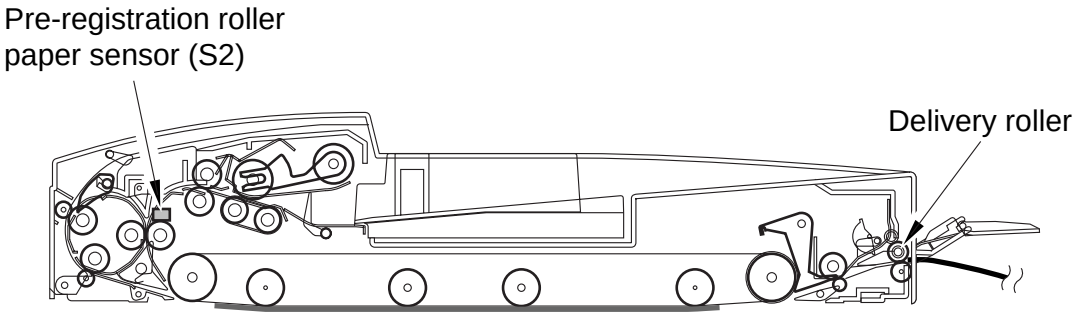
F02-206-11

5) When the copier's scanner starts to move in reverse, the feeding belt is rotated to move the 1st original in the delivery direction.
At the same time, the 2nd original is picked up.



F02-206-12

6) The 1st and the 2nd originals are moved by the feeding belt; the feeding belt is rotated for a specific length after the trailing edge of the 2nd original has moved past the pre-registration roller paper sensor (S2) to determine the stop position for the 2nd original. The 1st original is delivered by the delivery roller.



F02-206-13

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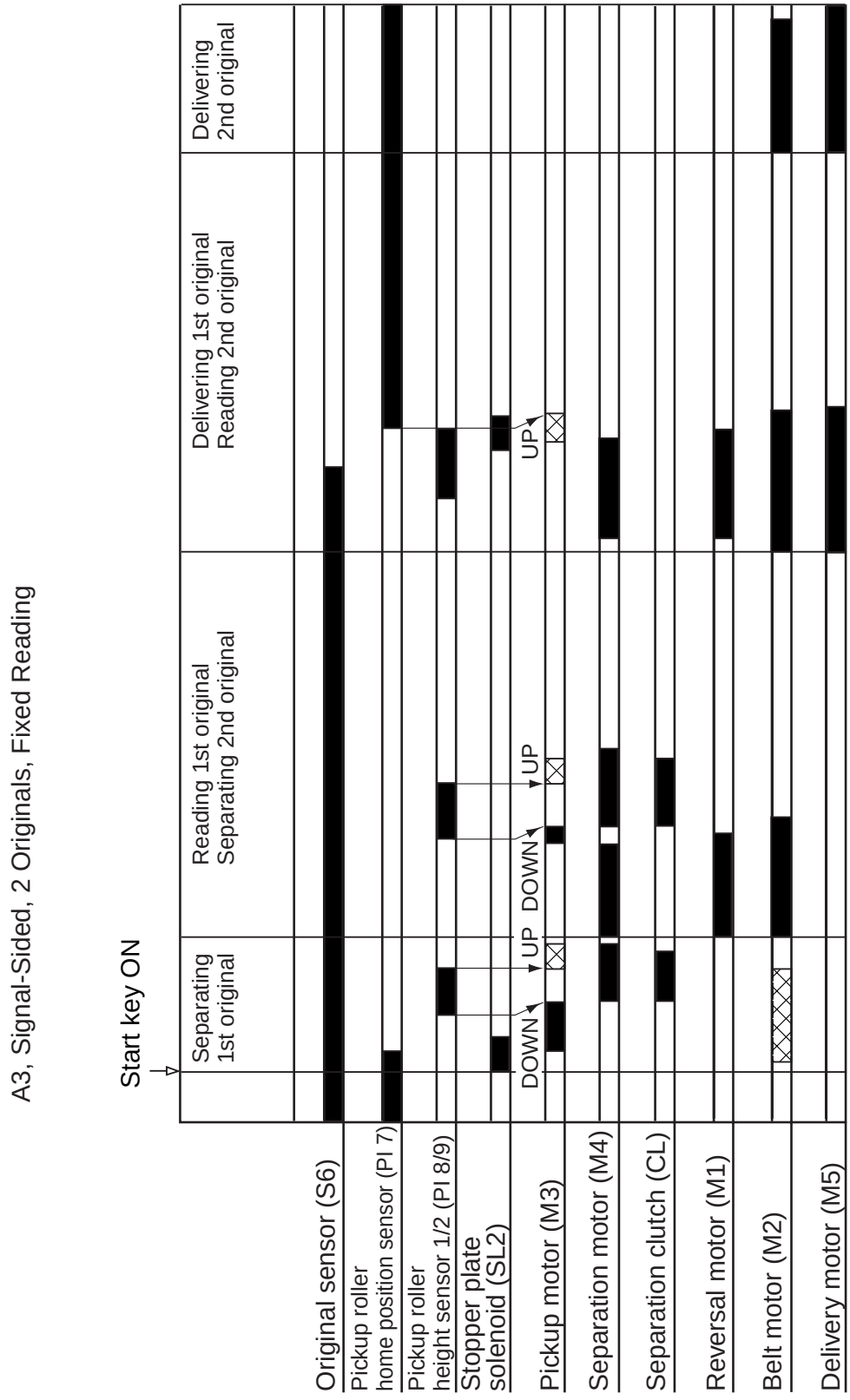
d.Sequence of Operations (large-size)



F02-206-14

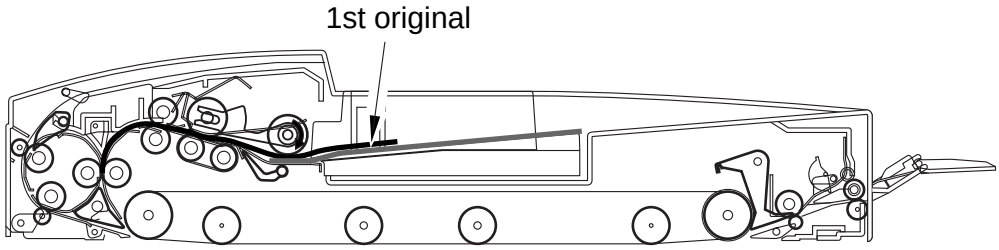
2.6.3 Stream Reading

In stream reading, the copier's scanner is fixed in position, and originals are moved over the copyboard glass to make copies.

Its operation is as follows:

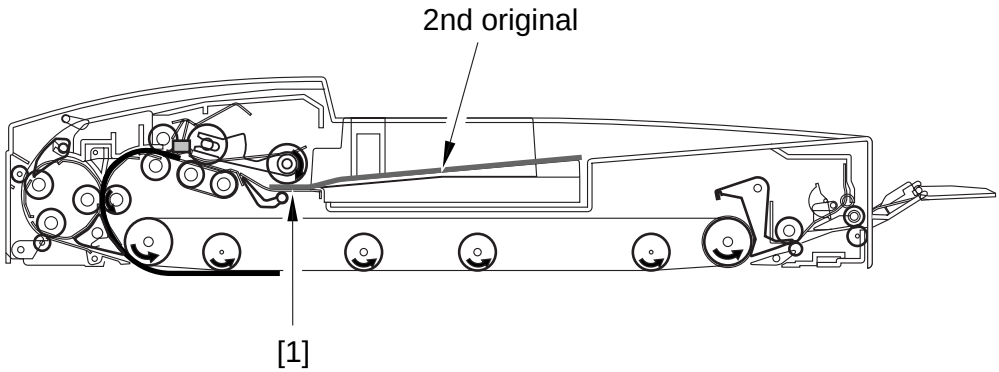
a. Small-Size Originals

1) The 1st original is picked up, and its leading edge is butted against the registration roller to remove the skew. (For details of pickup operation, see 2.4 "Picking Up/Separating Originals" on p. 2-26.)



F02-206-15

2) The registration roller and the feeding belt are rotated to move the original.
When the trailing edge of the 1st original has moved past the point of contact [1] of the pickup roller, the 2nd original is picked up.



F02-206-16

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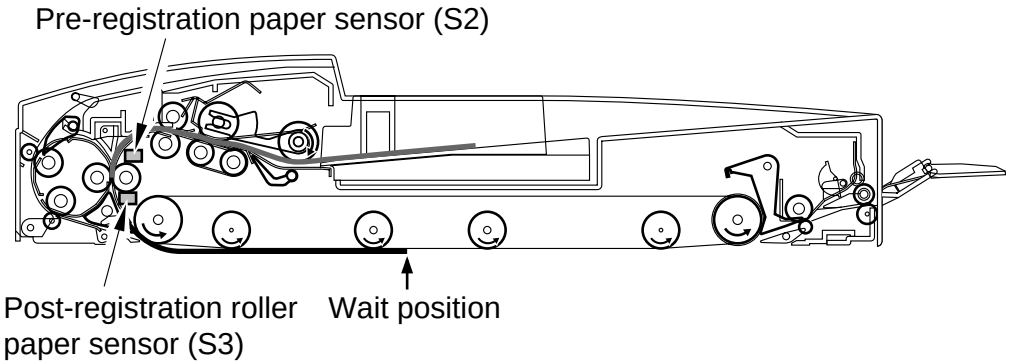
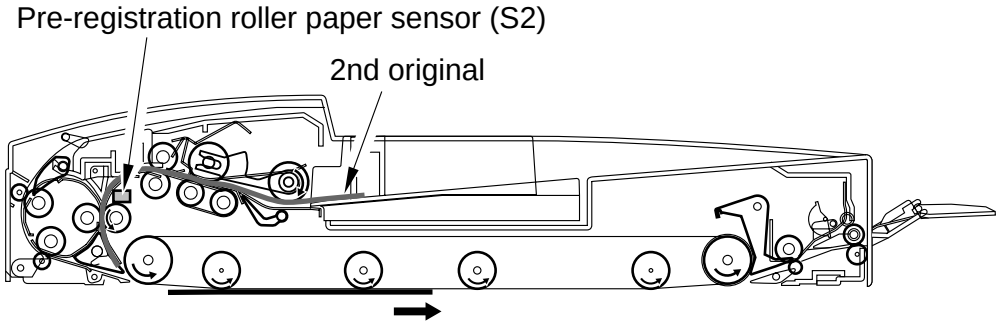
3) The 1st original is moved over a specific length by the feeding belt after its leading edge has moved past the post-registration roller paper sensor (S3) and held in wait.
(The DADF starts to keep count of the distance the 1st original moves after it has moved past the pre-registration paper sensor (S2).)



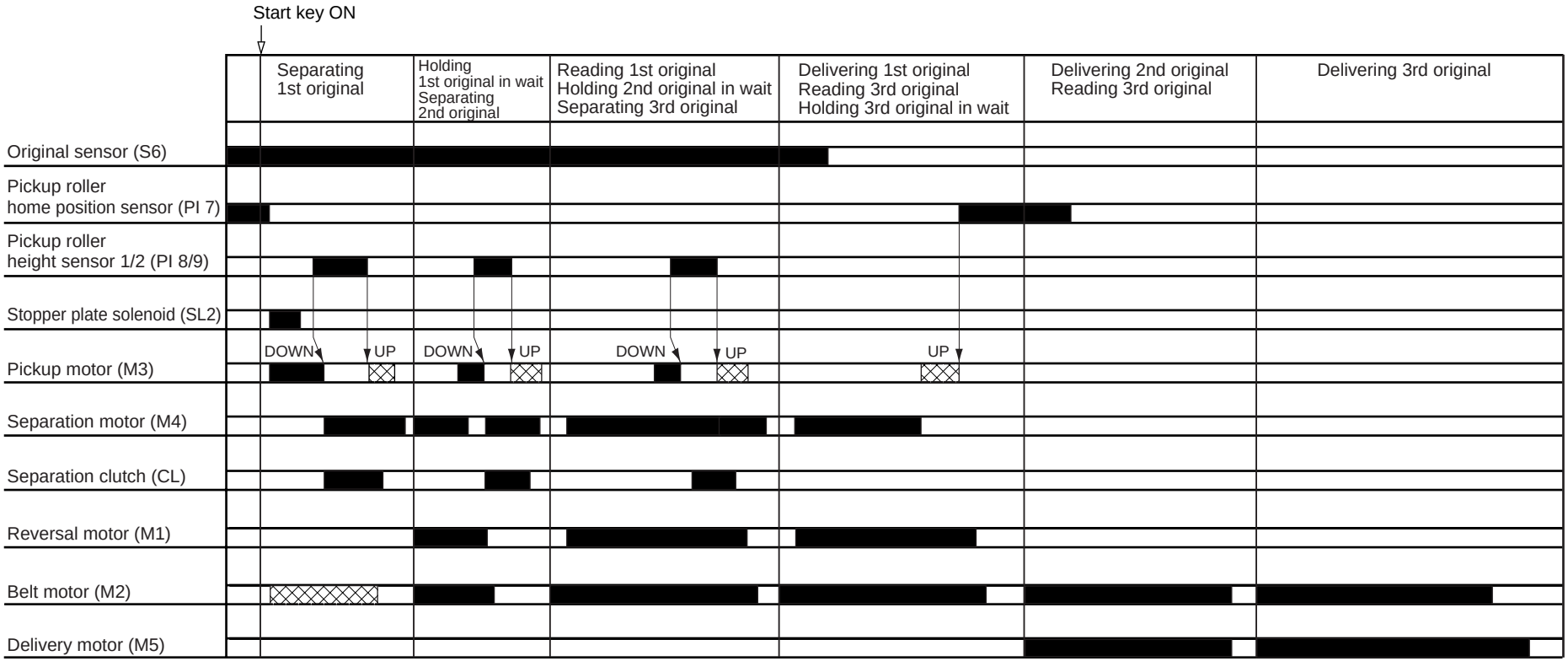
F02-206-17

4) The feeding belt is rotated to move the original for a specific distance.
When the 1st original has moved a specific distance (in reference to the count kept since its trailing edge has moved past the pre-registration roller sensor (S2), the DADF issues the image leading edge signal to the copier. In response to the image leading edge signal, the copier starts reading of the original.
At this time, the 2nd original is also moved and is kept on hold in wait position.



F02-206-18

A4, Single-Sided, 3 Originals, Stream Reading


Start key ON
Separating 1st original
Holding 1st original in wait Separating 2nd original
Reading 1st original Holding 2nd original in wait Separating 3rd original
Delivering 1st original Reading 3rd original Holding 3rd original in wait
Delivering 2nd original Reading 3rd original
Delivering 3rd original
Original sensor (S6)
Pickup roller home position sensor (PI 7)
Pickup roller height sensor 1/2 (PI 8/9)
Stopper plate solenoid (SL2)
Pickup motor (M3)
DOWN
UP
Separation motor (M4)
Separation clutch (CL)
Reversal motor (M1)
Belt motor (M2)
Delivery motor (M5)

: motor CCW rotation.

F02-206-19

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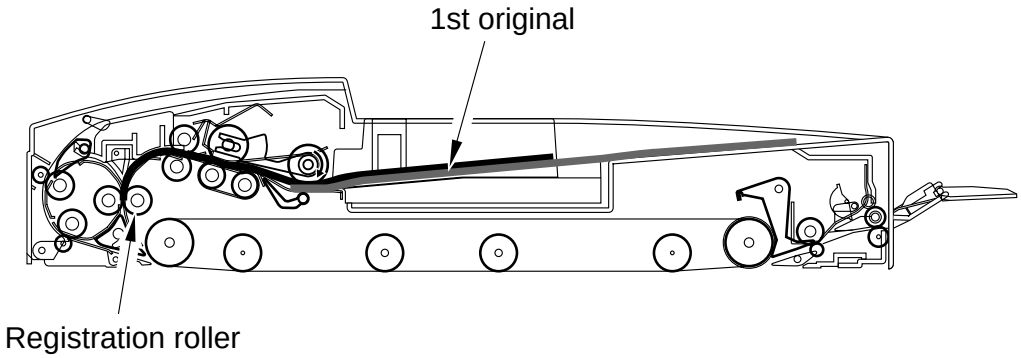
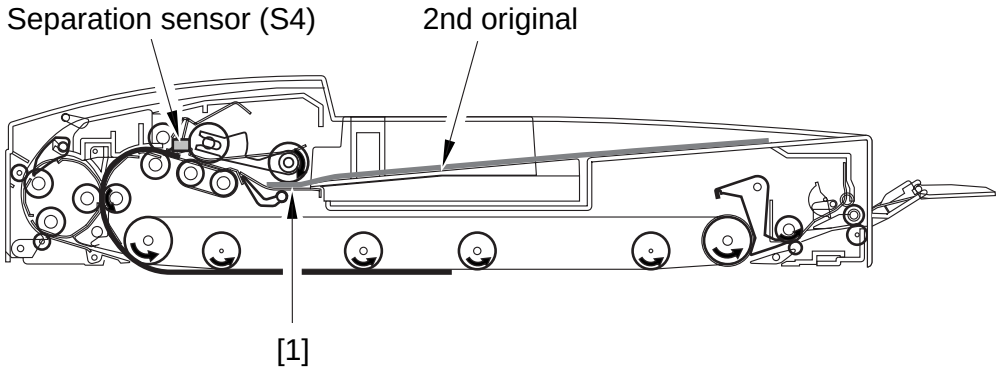
c.Large-Size Originals

1) The 1st original is picked up, and its leading edge is butted against the registration roller to remove the skew. (For details of pickup operation, see 2.4 “Picking Up/Separating Originals” on p. 2-26.)



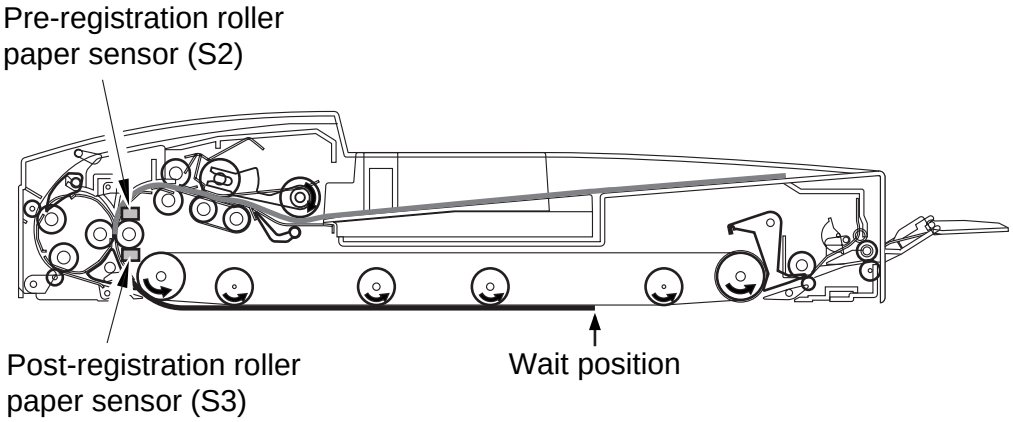
F02-206-20

2) The registration roller and the feeding belt are rotated to move the original.
When the trailing edge of the 1st original moves past the point of contact [1] of the pickup roller, the 2nd original is started.
(If the original is 279.4x431.8 mm (11"x17") in size, this step takes place after the movement of the original starts in step 4.)



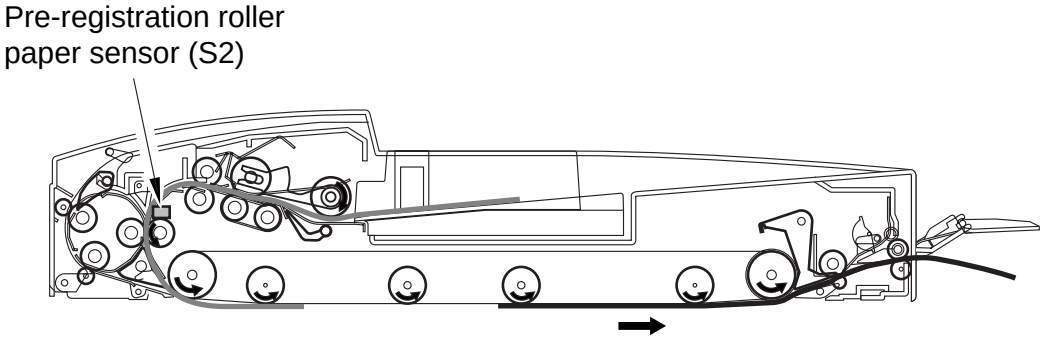
F02-206-21

3) When the leading edge of the original has moved past the post-registration roller (S3), the feeding belt is rotated for a specific length, and the original is stopped once (wait position).
(The DADF starts to keep count of the distance of movement after it has moved past the pre-registration roller paper sensor (S2).)



F02-206-22

4) The feeding belt is rotated to move the original.
When the original has moved a specific distance (in relation to the count kept since its trailing edge has moved past the pre-registration roller sensor (2)), the DADF issues the image leading edge signal to the copier.
The copier starts reading the original in response to the image signal. At this time, the 2nd original is also moved and then stopped in wait position.



F02-206-23

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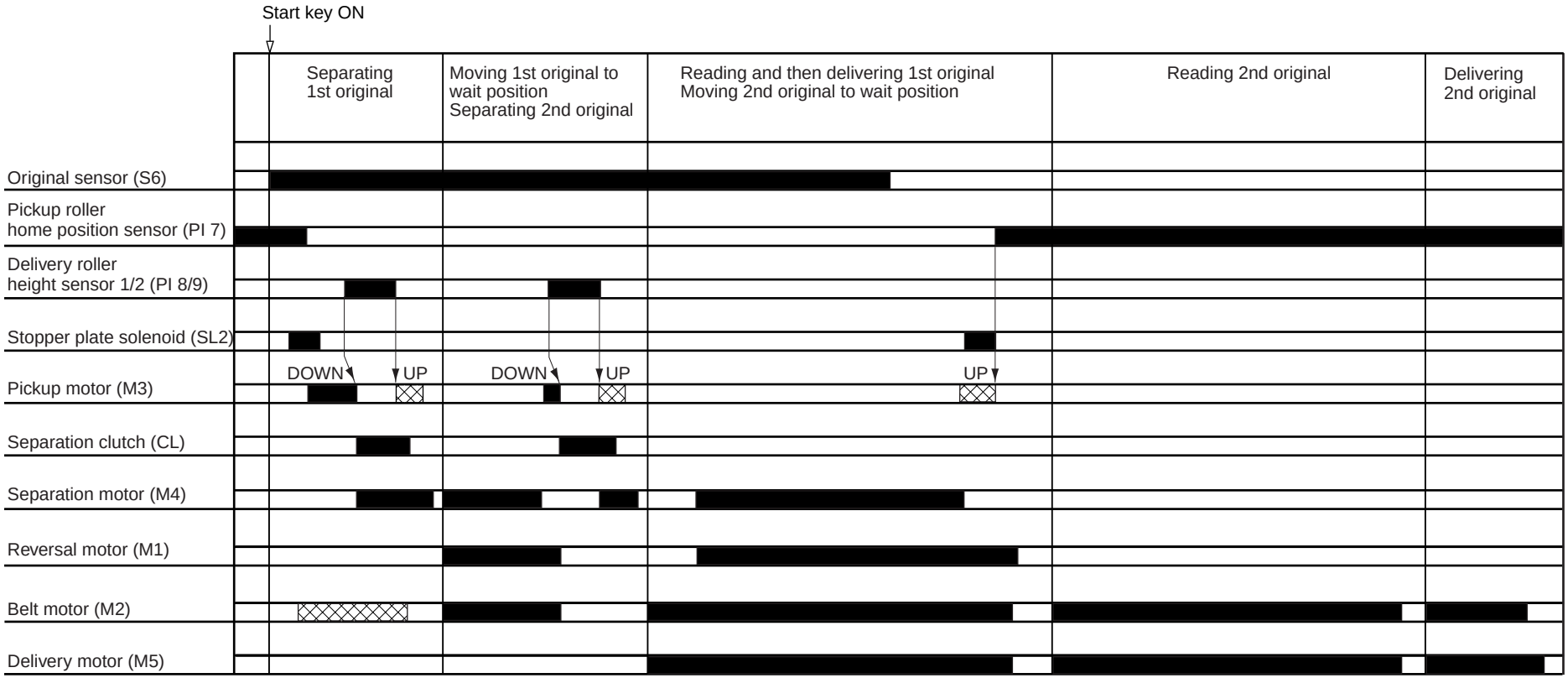
A3, Signal-Sided, 2 Originals; Stream Reading



▨ : motor CCW rotation.

F02-206-24

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2.7 Pre-Reversal Pickup/Delivery

2.7.1 Outline

In pre-reversal, the original is handled by turning it over in advance of sending it to the copyboard glass.

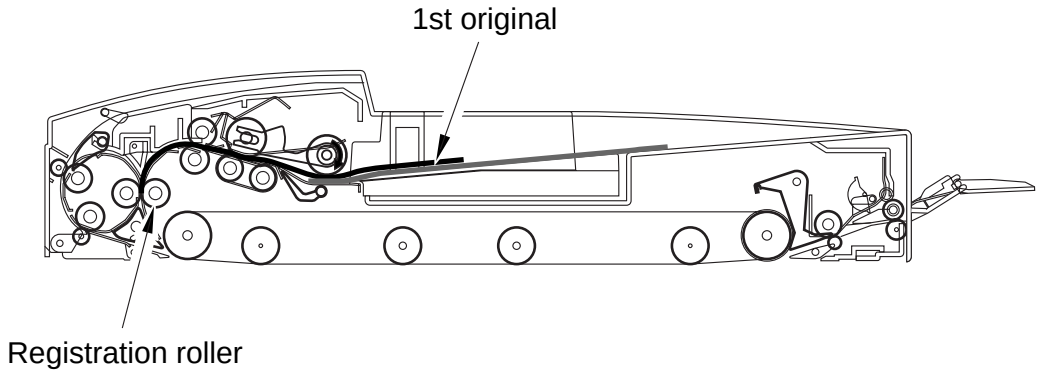
Pre-reversal pickup/delivery is used when making double-sided copies of small-size originals, and fixed reading is used for it.

Operation	Operation mode	Copying mode
Pre-reversal pickup/ delivery	Fixed reading	Double-sided original to single-side copy (reproduction ratio: 25% to 400%) Double-sided original to double-sided copy (reproduction ratio: 25% to 400%)

T02-207-01

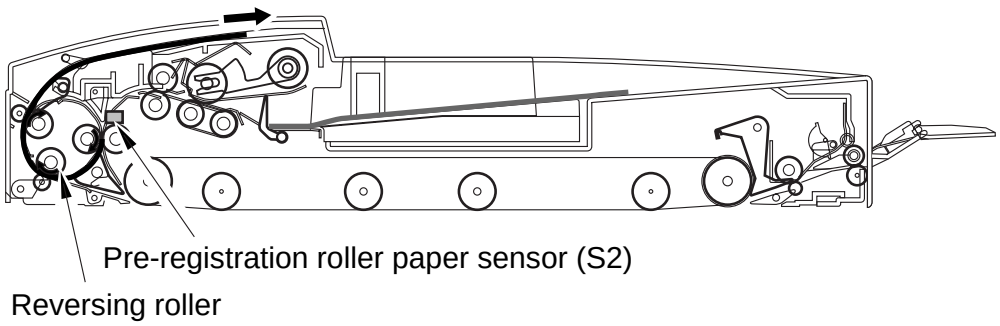
2.7.2 Operations

1) The 1st original is picked up, and its leading edge is butted against the registration roller to remove the skew. (For details of operation, see 2.4 “Picking Up/Separating Originals” on p. 2-26.)



F02-207-01

2) The registration roller and the reversing roller are driven to turn over the original. The 1st original is moved by the reversing roller for a specific length after its trailing edge has moved past the pre-registration roller paper sensor (S2) and then stopped.



F02-207-02

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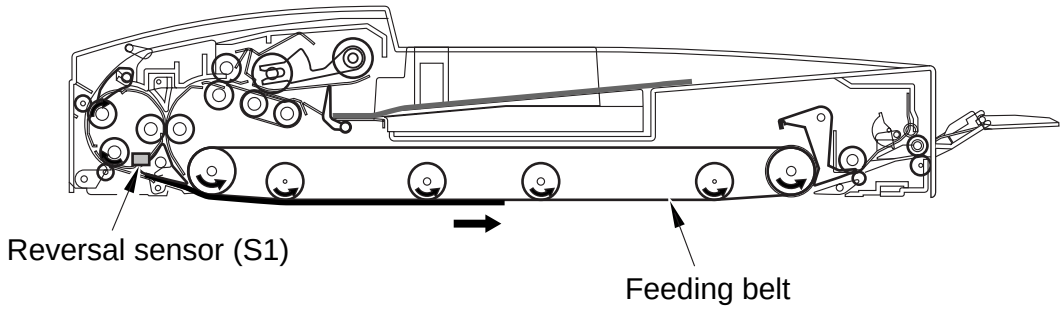
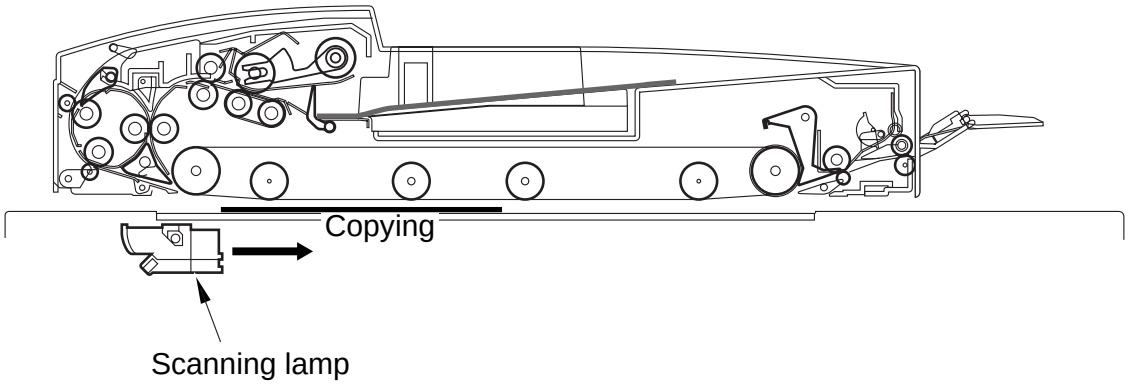
3) The reversing roller and the feeding belt are rotated to move the original.
When the trailing edge of the 1st original moves past the reversal sensor (S1), the feeding belt is rotated for a specific length to determine the original stop position.



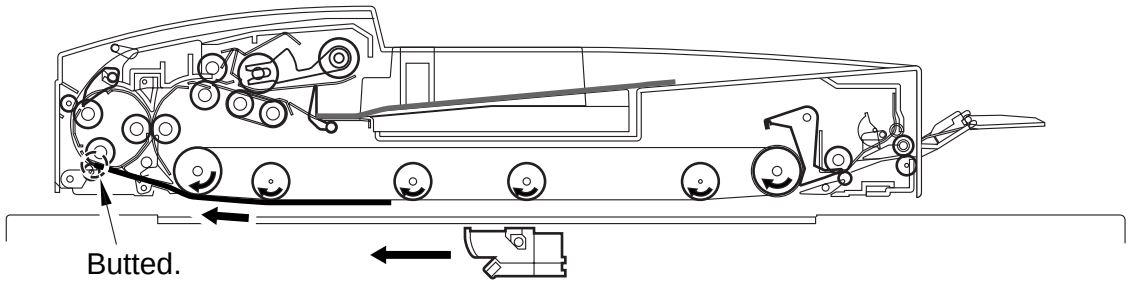
F02-207-03

4) The copier's scanner starts copying operation.



F02-207-04

5) When the copier's scanner starts to move in reverse, the feeding belt is rotated to send the 1st original to the reversing assembly. At this time, the leading edge of the original is butted against the reversing roller to remove the skew.



F02-207-05

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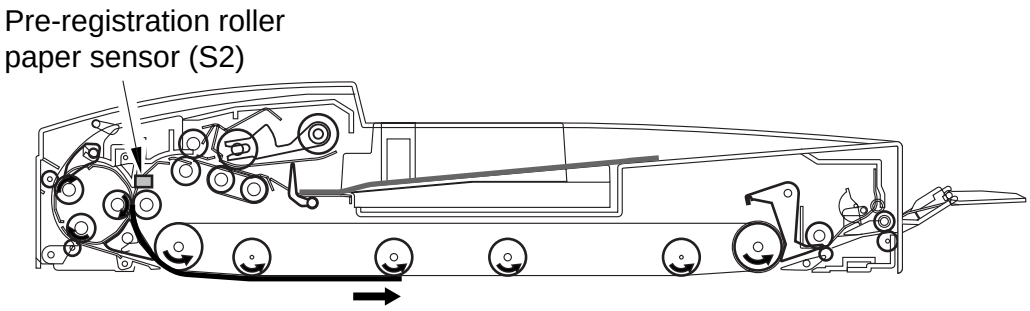
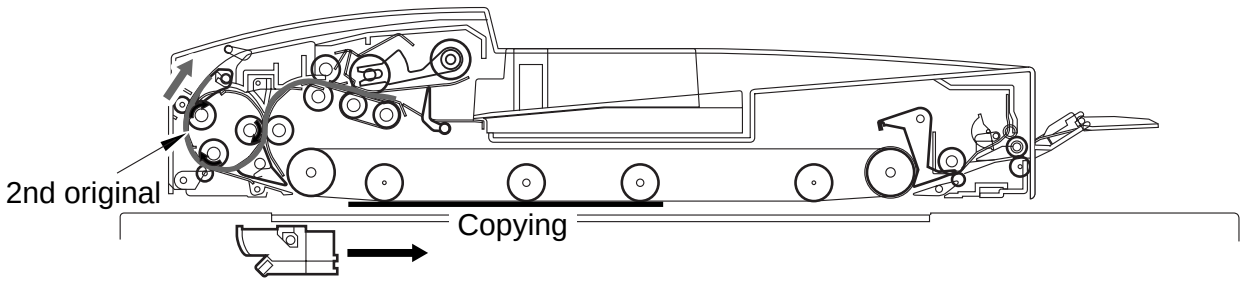
6) The reversing roller and the feeding belt are rotated to move the original to the copyboard glass.
The 1st original is moved over a specific distance by the feeding belt after its trailing edge has moved past the pre-registration roller paper sensor (S2) and is stopped.



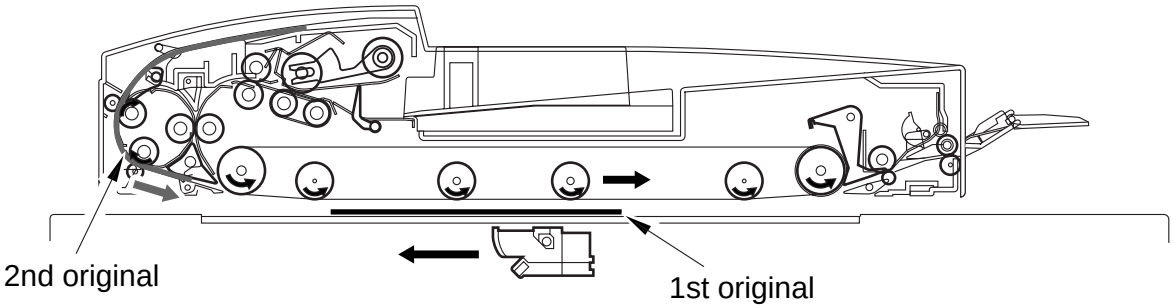
F02-207-06

7) The copier's scanner starts copying operation.
At this time, the 2nd original is also picked up and turned over. (See steps 1 and 2.)



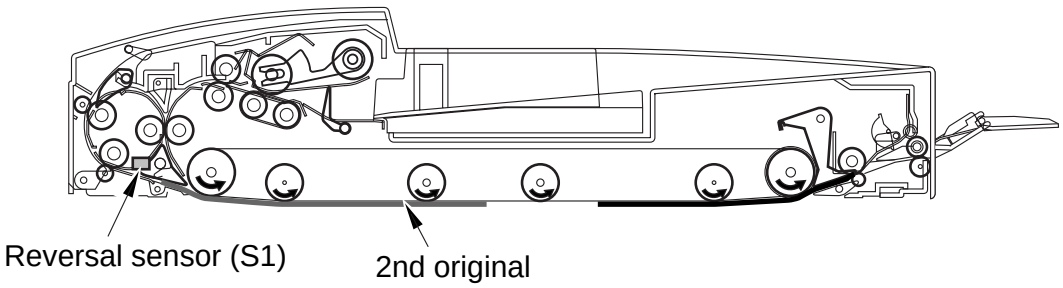
F02-207-07

8) When the copier's scanner starts to move in reverse, the reversing roller and the feeding belt are rotated to move the 1st and the 2nd originals.



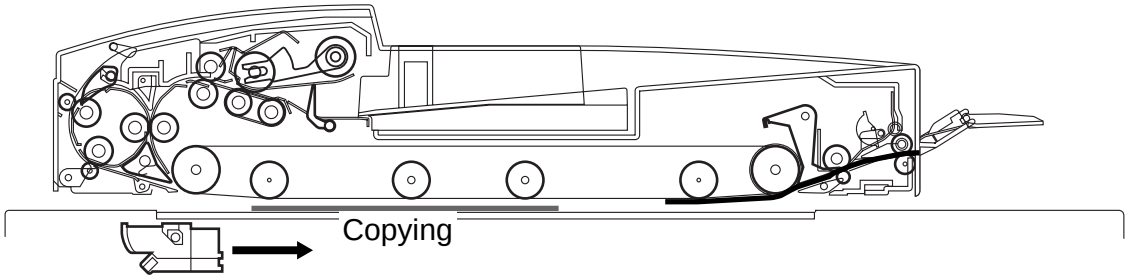
F02-207-08

9) When the 2nd original has moved past the reversal sensor (S1), the feeding belt is rotated for a specific length to end the movement of the original.



F02-207-09

10) The copier's scanner starts copying operation.



F02-207-10

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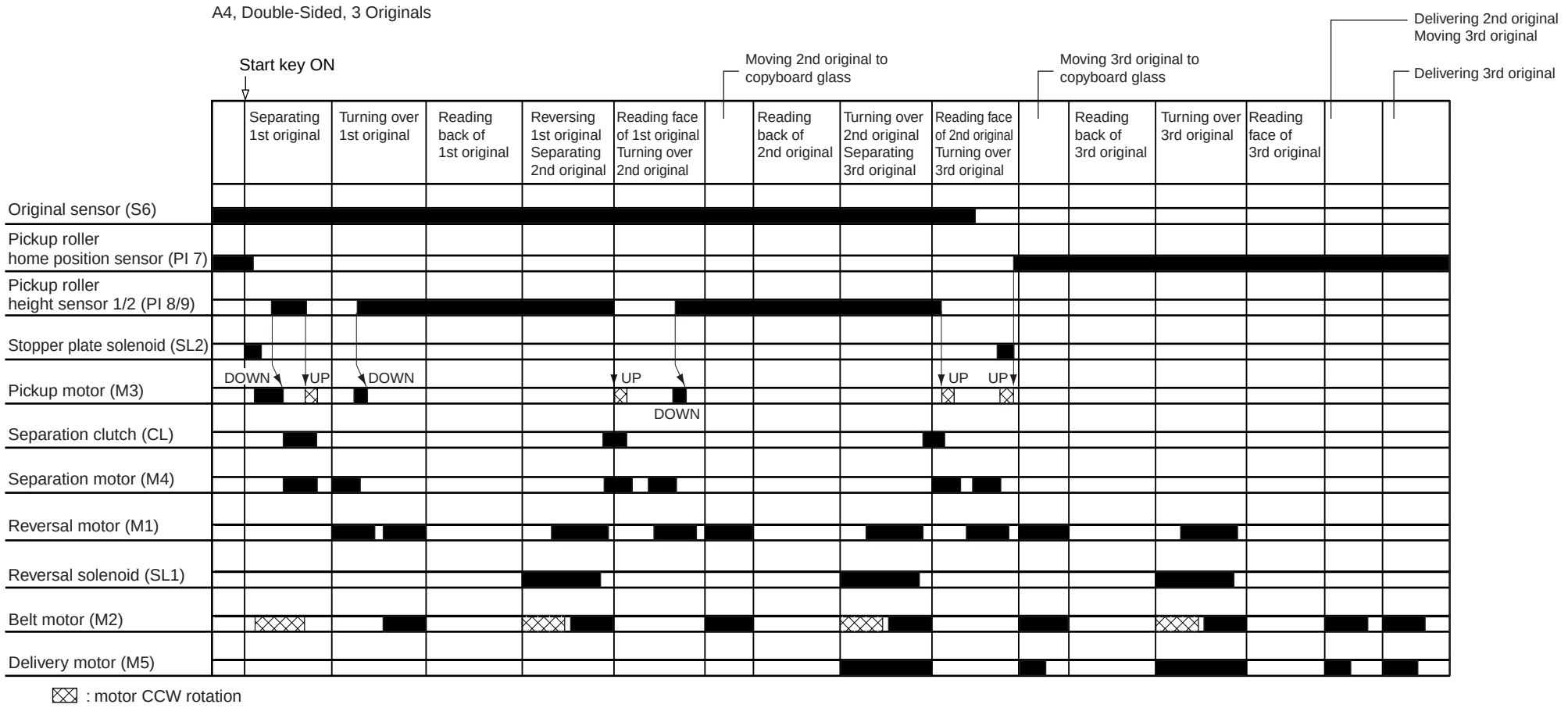

F02-207-11

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2.8 Reversal Pickup/Delivery

2.8.1 Outline

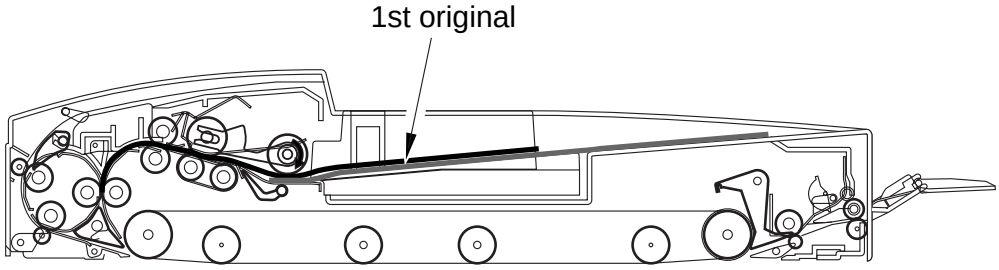
Reversal pickup/delivery is used when making copies of large-size double-sided originals. Fixed reading is used.

Operation	Operation mode	Copying mode
Reversal pickup/delivery	Fixed reading	Double-sided original to single-sided copy (reproduction ratio: 25% to 400%) Double-sided original to double-sided copy (reproduction ratio: 25% to 400%)

T02-208-01

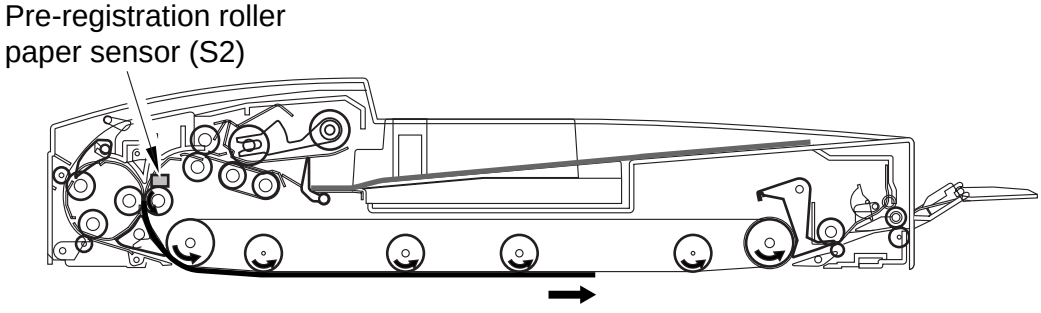
2.8.2 Operations

1) The 1st original is picked up, and its leading edge is butted against the registration roller to remove the skew. (For details of operation, see 2.4 “Picking Up/Separating Originals” on p. 2-26.)



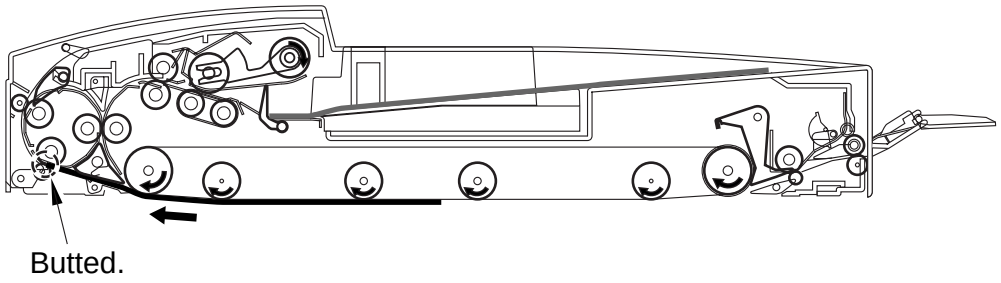
F02-208-01

2) The reversing roller and the feeding belt are driven to move the original.
The 1st original is moved over a specific distance by the feeding belt after its trailing edge has moved the pre-registration roller paper sensor (2) and is stopped.



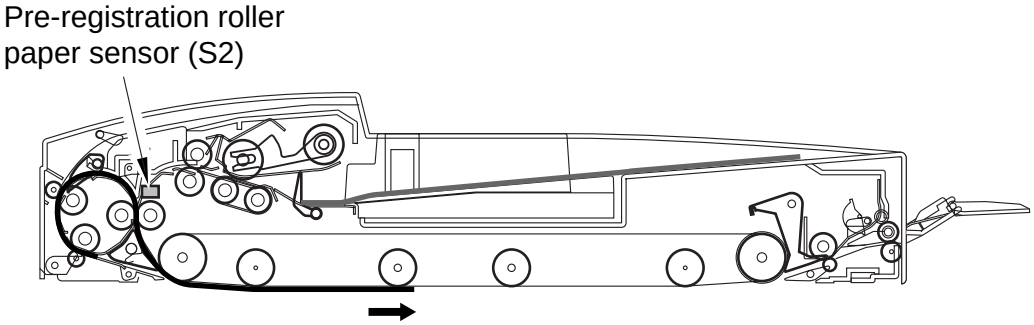
F02-208-02

3) The feeding belt is rotated to move the original to the reversing assembly. At this time, the leading edge of the 1st original is butted against the reversing roller to remove the skew.



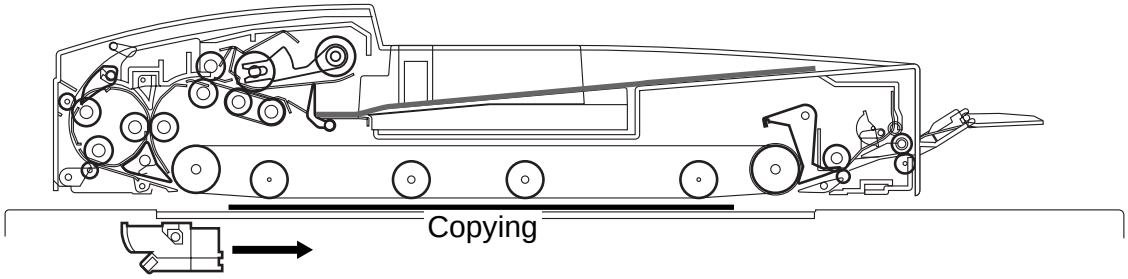
F02-208-03

4) The reversing roller and the feeding belt are rotated to move the original to the copyboard glass.
The 1st original is moved over a specific distance by the feeding belt after its trailing edge has moved past the pre-registration roller paper sensor (S2) and then is stopped.



F02-208-04

5) The copier's scanner starts copying operation.



F02-208-05

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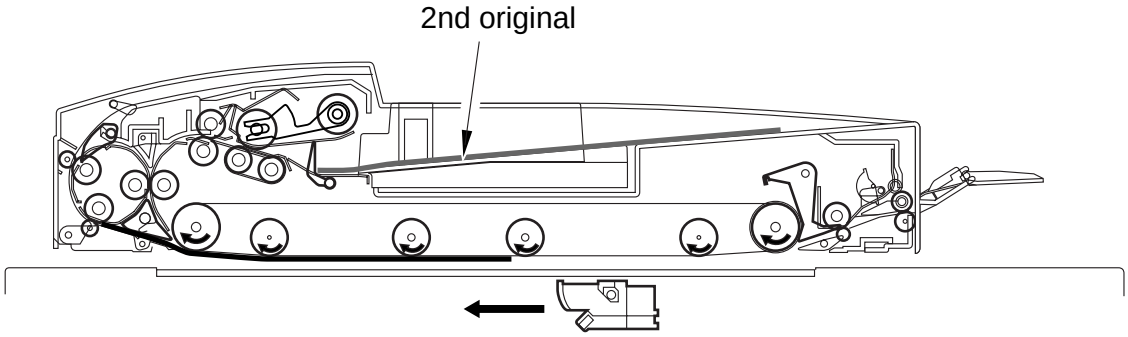
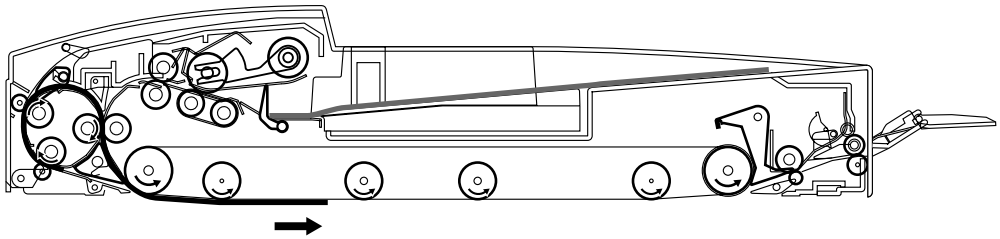
6) The copier's scanner starts to move in reverse. The feeding belt is rotated to send the 1st original to the reversing assembly. At this time the leading edge of the original is butted against the reversing roller to remove the skew.



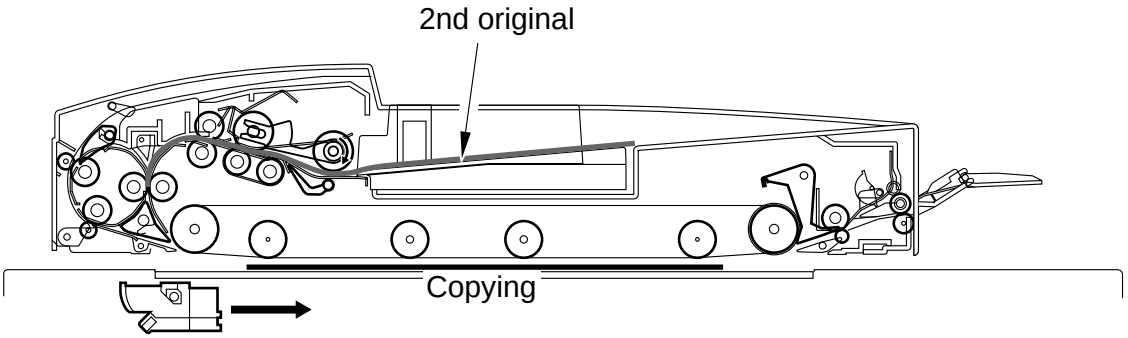
F02-208-06

7) The reversing roller and the feeding belt are rotated to move the original to the copyboard glass.
The 1st original is moved over a specific distance by the feeding belt after its trailing edge has moved past the pre-registration roller paper sensor (S2) and is then stopped.



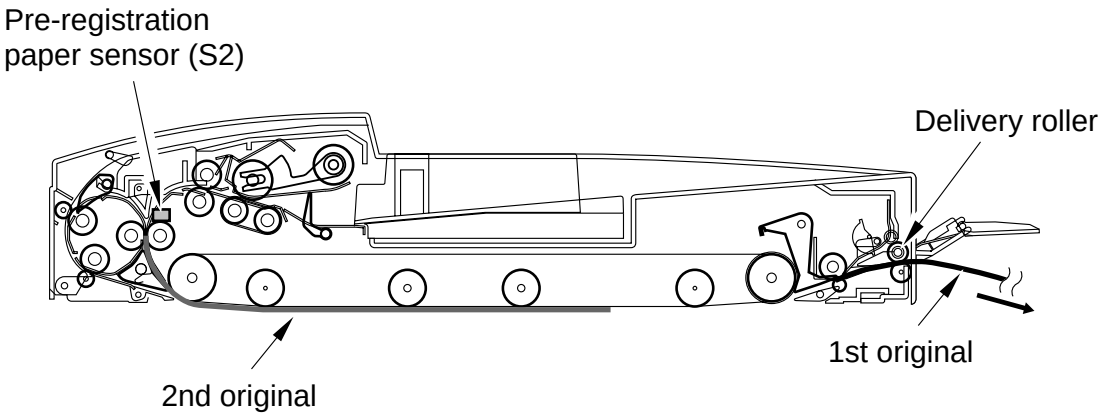
F02-208-07

8) The copier's scanner starts copying operation.
At this time, the 2nd original is also picked up, and its leading edge is butted against the registration roller.



F02-208-08

9) The 2nd original is moved a specific distance by the feeding belt after it has moved past the pre-registration belt sensor (S2) to end the movement of the original. The 1st original is delivered by the delivery roller.



F02-208-09

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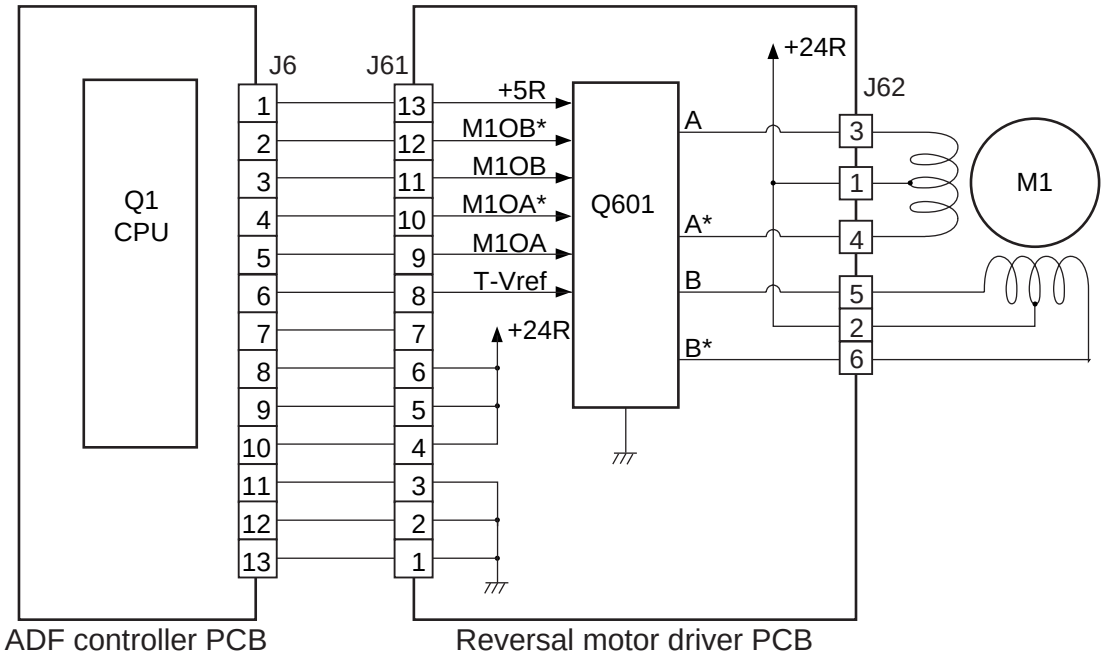
2.8.3 Controlling the Reversal Motor (M1)

The following is the control circuit diagram of the reversal motor (M1). The reversal motor is a 4-phase stepping motor, and the circuit is used for the following:

- Turning on/off the motor.
- Controlling the rotation direction of the motor.
- Controlling the rotation speed of the motor.



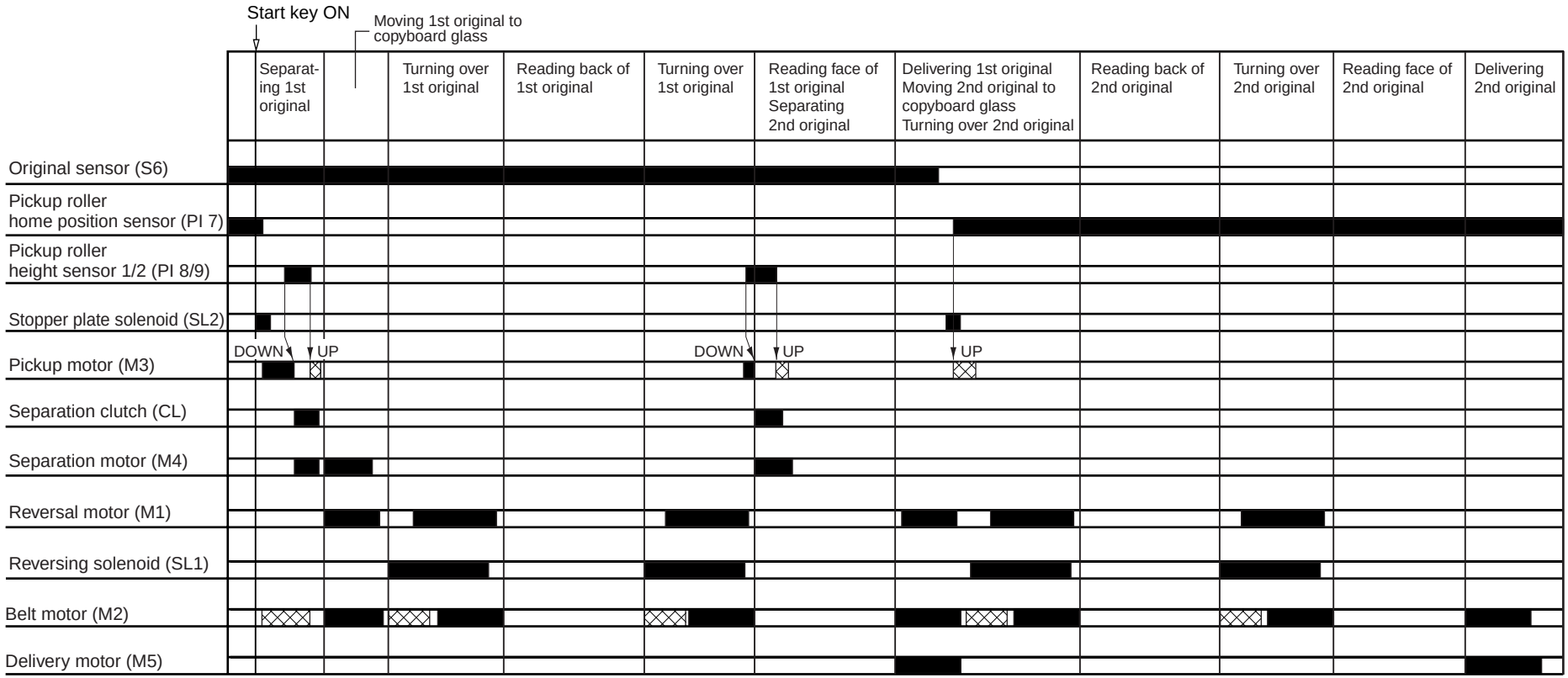
F02-208-10

The CPU (Q1) on the ADF controller PCB serves to send various motor control signals to the reversal motor driver PCB, which in response controls the motors:

Signal	Description
M10A	Phase control (direction, speed of rotation)
M10A*	Phase control (direction, speed of rotation)
M10B	Phase control (direction, speed of rotation)
M10B*	Phase control (direction, speed of rotation)
T-Vref	Sets motor rotation torque.

T02-208-02

A3, Double-Sided, 2nd Originals



⊠ : motor CCW rotation.

F02-208-11

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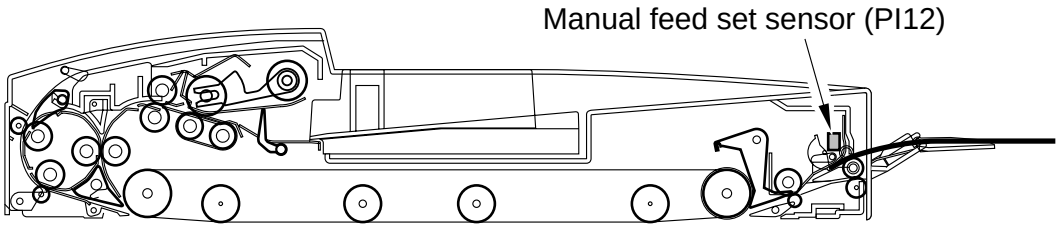
2.9 Manual Feeder Pickup/Delivery

2.9.1 Operations

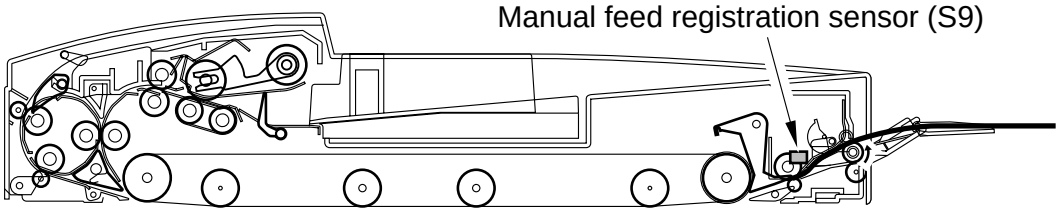
Manual feeder pickup/delivery is used only in fixed reading mode.

1) When an original is placed in the manual feeder, the manual feed set sensor (PI12) goes on.



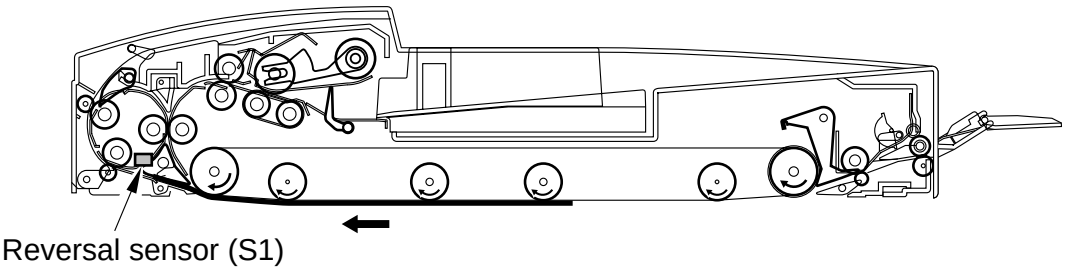
F02-209-01

2) When the Start key is pressed, the original is moved by the delivery roller so that its leading edge is butted against the manual feed registration roller (to remove the skew).



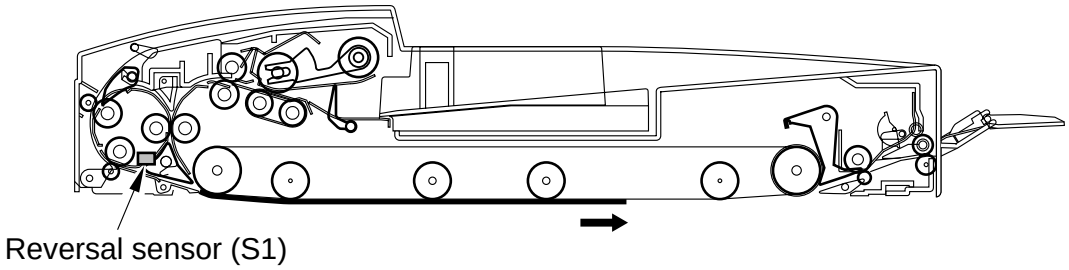
F02-209-02

3) The original is moved by the delivery roller and the feeding belt, and is stopped when its leading edge reaches the reversal sensor (S1).



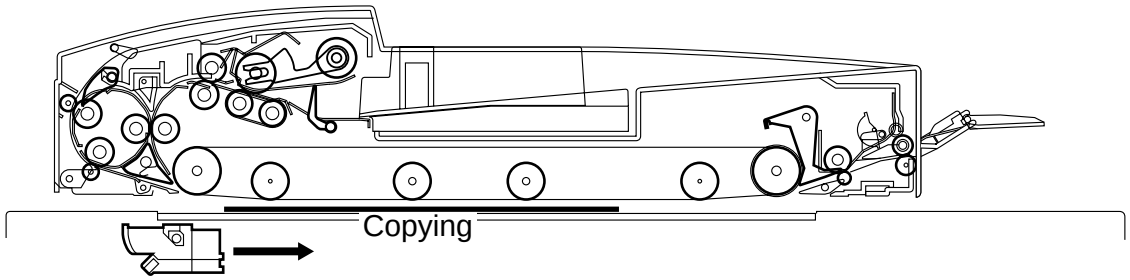
F02-209-03

4) The feeding belt rotates to move the original, which is moved over a specific distance after its trailing edge moves past the reversal sensor (S1) and then stopped.



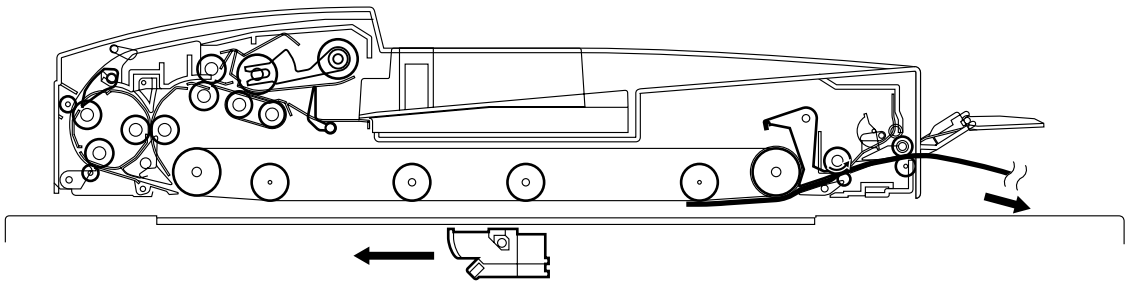
F02-209-04

5) The copier's scanner starts copying operation.



F02-209-05

6) When the copier's scanner starts to move in reverse, the feeding belt and the delivery roller are rotated to send the original to the delivery assembly.



F02-209-06

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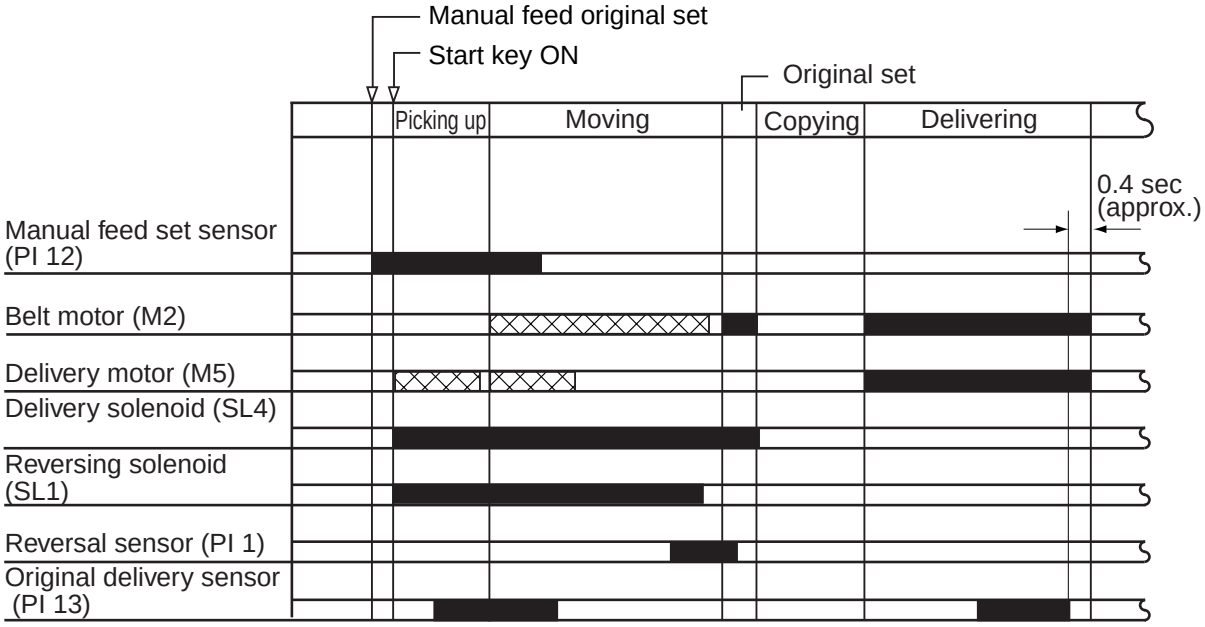
2.9.2 Sequence of Operations



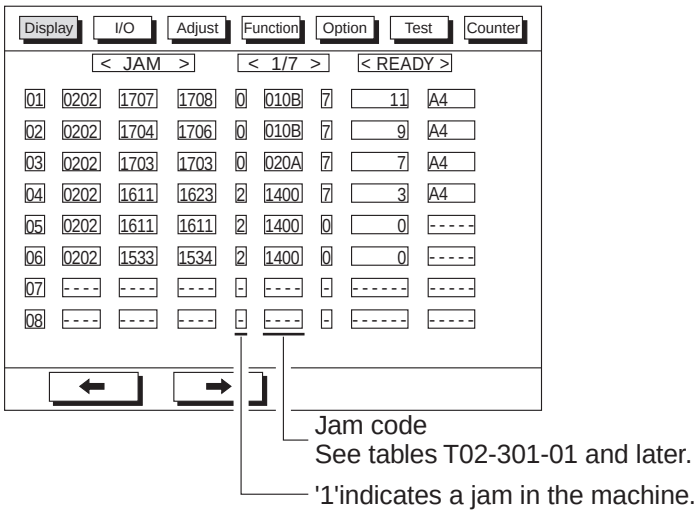
F02-209-07

3 Jams

The DADF uses the sensors shown in F02-301-03 to detect a jam. The timing at which jam detection is tuned on is programmed in advance in the CPU on the ADF controller PCB, and the presence/absence of a jam is detected in relation to the presence/absence of paper over a specific sensor.

When a jam is detected, the DADF communicates the fact to the copier in the form of a code, and some copiers allow a check on jam codes in service mode. The indicator (LED2) on the ADF controller PCB of the DADF may also be used to check codes.

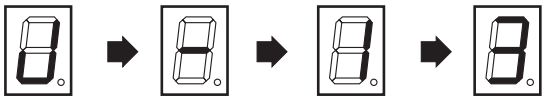
Copier's Service Mode Screen



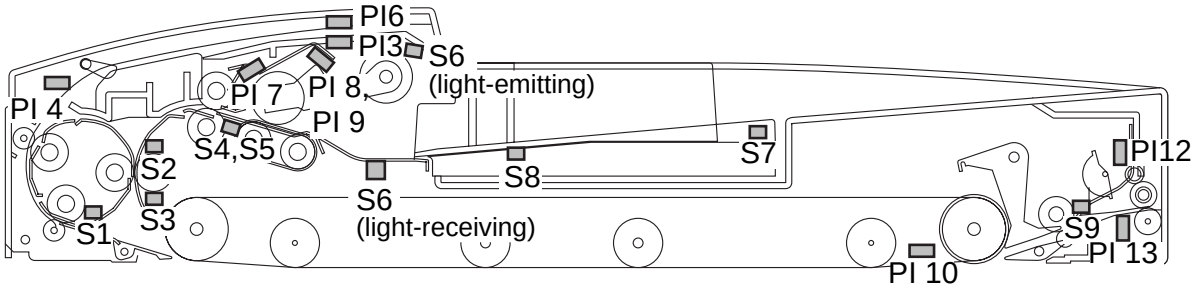
F02-301-01 Screen

Indication on the DADF

The indication (LED2) on the ADF controller PCB is based on how the LED flashes (four times); for example, if the code is J-13,



F02-301-02



F02-301-03

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The following shows jam codes, jam types, related sensors, and conditions of detection:

Jam code		Jam type	Related sensor	Conditions of detection
DADF	Copier			
J-1A (1st original)	001A	Post-pickup original skew	S4 S5	At time of pickup, the discrepancy in the timing of detection of the trailing edge of the original between the separation sensor and the skew sensor is 25 mm or more in terms of feed length.
J-11	0011			
J-1D (1st original)	001D	Pickup fault 1	S1	At time of pickup up, the reversal sensor detects paper.
J-12	0012			
J-13	0013	Pickup fault 2	S3	At time of pickup, the reversal sensor detects paper. At time of pickup, the post-registration paper sensor detects an original before the reversal motor (M1) goes on.
			S2	At time of pickup, the pre-registration paper sensor does not detect an original although an original is assumed to have been moved over a specific distance.
			S3	At time of pre-reversal, the post-registration roller sensor detects an original before the reversal motor (M1) goes on.
			S2	At time of reversal, the pre-registration roller paper sensor does not detect an original after an original is assumed to have been moved over a specific length.
J-1E (1st original)	001E	Reversal delay	S1	At the start of reversal, the reversal sensor does not detect an original although an original is assumed to have been moved over a specific distance (104 mm).
J-14	0014			
J-1B (1st original)	001B	Reversal pickup trailing edge skew	S4 S5	At time of pre-reversal, the discrepancy in the timing of detection of the trailing edge of an original between the separation sensor and the skew sensor is 10 mm or more in terms of feed length.
J-15	0015			
J-1F (1st original)	001F	Reversal pickup fault	PI4	At time of reversal, the pre-reversal sensor detects an original after an original has been moved over a specific distance.
J-16	0016			
J-19	0019	Residual original	S1	Prior to pickup, the reversal sensor detects an original when the belt motor is driven for a specific amount.

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Jam code		Jam type	Related sensor	Conditions of detection
DADF	Copier			
J-22	0022	Separation delay	S4	At time of operation, the separation sensor does not detect an original although an original is assumed to have been moved over a specific length (171 mm). (2nd original and later)
J-23	0023	Pickup delay	S4 S2	At time of separation, the pre-registration roller paper sensor does not detect an original although an original is assumed to have been moved over a specific distance (about 93 mm) after the separation sensor has detected the leading edge of an original
J-2A (1st original)	002A	Pickup leading edge skew	S4 S5	At time of separation, the discrepancy in timing of detection of the training edge of an original between the separation sensor and the skew sensor is 25 mm or more in terms of feed length.
J-24	0024			
J-2B (1st original)	002B	Pre-reversal delay 1	S3	At time of pre-reversal, the post-registration roller sensor does not detect an original after the reversal motor (M1) has been driven for an equivalent of 50 mm.
J-25	0025			
J-2C (1st original)	002C	Pre-reversal delay 2	S3 S1	At time of pre-reversal, the reversal sensor does not detect an original although an original is assumed to have been moved over a specific distance (100 mm) after the post-registration roller sensor has detected its leading edge.
J-26	0026			
J-2D (1st original)	002D	Pre-reversal delay 3	PI4	At time of pre-reversal, the pre-reversal sensor does not detect an original after the reversal motor (M1) has stopped.
J-27	0027			
J-3A (1st original)	003A	Pickup stationary 1	S3	At time of pickup, the post-registration roller sensor does not detect an original although an original is assumed to have been moved 40 mm after the reversal motor has been started.
J-31	0031			
J-3B (1st original)	003B	Pickup stationary 2	S2	At time of pickup, the pre-registration roller paper sensor remains on although an original is assumed to have been moved over a specific distance (330 mm for small-size, 660 mm for large-size) after the reversal motor (M1) has been started.
J-32	0032			

T02-301-02

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Jam code		Jam type	Related sensor	Conditions of detection
DADF	Copier			
J-3C (1st original)	003C	Pre-reversal stationary 1	S1 S4	At time of pre-reversal, the separation sensor remains on although an original is assumed to have been moved over a specific distance (169 mm) after the reversal sensor has detected its leading edge.
J-33	0033			
J-3D (1st original)	003D	Pre-reversal stationary 2	S2 S4	At time of pre-reversal, the pre-registration roller paper sensor remains on although an original is assumed to have been moved over a specific length (about 120 mm) after the trailing edge of an original has moved past the separation sensor.
J-34	0034			
J-3E (1st original)	003E	Pre-reversal stationary 3	S2 S3	At time of pre-reversal, the post-registration roller paper sensor remains on although an original is assumed to have been moved over a specific length (about 50 mm) after the trailing edge of an original has moved past the pre-registration roller paper sensor.
J-35	0035			
J-3F (1st original)	003F	Pre-reversal stationary 4	S1 S3	At time of pre-reversal, the reversal sensor remains on although an original is assumed to have been moved over a specific distance (about 100 mm) after its trailing edge has moved past the post-registration roller sensor.
J-36	0036			
J-4A (1st original)	004A	Reversal delay	S1	At time of reversal, the reversal sensor detects an original after an original has been made to arch and then moved over a specific distance (original length x 1.5; approx.).
J-41	0041			
J-5A (1st original)	005A	Reversal pickup delay	S2	At time of reversal, the pre-registration roller sensor does not detect an original although an original is assumed to have been moved over a specific distance (about 197 mm) after it has been made to arch (S1 area).
J-52	0052			
J-5B (1st original)	005B	Reversal pickup stationary	S2	At time of reversal, the pre-registration roller paper sensor remains on although an original is assumed to have been moved over a specific distance (original length x 1.5) after the pre-registration roller paper sensor has detected its leading edge.
J-54	0054			

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Jam code		Jam type	Related sensor	Conditions of detection
DADF	Copier			
J-5C (1st original)	005C	Pre-reversal pickup delay	S1	At time of pre-reversal pickup, the reversal sensor does not detect an original when the reversal motor has been driven for an equivalent of 100 mm in feed length.
J-55	0055			
J-5D (1st original)	005D	Pre-reversal paper stationary 1	S1 PI4	At time of pre-reversal, the pre-reversal sensor remains on although an original is assumed to have been moved cover a specific distance after the reversal sensor has detected its leading edge.
J-56	0056			
J-5E (1st original)	005E	Pre-reversal pickup stationary 2	S1 PI4	At time of pre-reversal pickup, the reversal sensor remains on although an original is assumed to have been moved over a specific length after the pre-reversal sensor has detected its trailing edge.
J-57	0057			
J-8A (1st original)	008A	Delivery delay	PI13	At time of delivery, the original delivery sensor does not go on after the belt motor has been driven to move an original over a specific distance.
J-81	0081			
J-8B (1st original)	008B	Delivery stationary 1	PI13 S9	At time of delivery, the manual feed registration roller paper sensor remains on although an original is assumed to have been moved over a specific distance (original length + 100 mm) after the original delivery sensor has detected its leading edge.
J-82	0082			
J-8C (1st original)	008C	Delivery stationary 2	S9 PI13	At time of delivery, the original delivery sensor remains on although an original is assumed to have been moved for 100 mm after its trailing edge has moved past the manual feed registration roller paper sensor.
J-83	0083			
J-92	0092	Manual feed registration delay	S9	When a manually fed original is made to arch, the manual feed registration roller paper sensor does not detect an original 1 sec after the delivery motor is started.
J-A1	00A1	Manual feed registration stationary	S1	At time of manual feed pickup, the reversal sensor does not detect an original although an original is assumed to have been moved 730 mm after the belt motor has been started.

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Jam code		Jam type	Related sensor	Conditions of detection
DADF	Copier			
J-A2	00A2	Manual feed reversal stationary	S1	At time of manual feed pickup, the reversal sensor remains on when the belt motor has been driven for an equivalent of about 50 mm after an original has reached the reversal sensor.
J-A3	00A3	Manual feed delivery delay	PI13	At time of manual feed delivery, the original delivery sensor does not detect an original although an original is assumed to have been moved over a specific distance (621 mm - original length).
J-A4	00A4	Manual feed delivery stationary	PI13	At time of manual feed delivery, the original delivery sensor remains on although an original is assumed to have been moved cover a specific distance (original length x 1.5) after the original delayed sensor has detected its leading edge.
J-A5	00A5	Manual feed residual original	S1 S9	At time of manual feed pickup, the reversal sensor detects an original before the trailing edge of an original moves past the manual feed registration roller paper sensor.
J-A6	00A6	Manual feed original size fault	S9 S1	At time of manual feed pickup, the reversal sensor goes on while the manual feed registration roller paper sensor remains on.
J-E1	00E1	ADF open	PI10	The DADF is opened.
J-E2	00E2	Left cover open	PI3 PI6	The left cover is opened.
J-E3	00E3	Cycle fault	S6	The pick signal arrives from the copier when no original has been detected.
J-E4	00E4	Initial fault	PI4 PI12 PI13 S1 S2 S3 S4 S5 S9	At the start of operation, an original exists in the paper path.

T02-301-05

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Jam code		Jam type	Related sensor	Conditions of detection
DADF	Copier			
J-E6	00E6	Original size fault	S3	In stream reading (LDR), the post-registration roller paper sensor remains on although an original is assumed to have been moved 30 mm from wait position.
J-E7	00E7	User ADF open	PI10	The DADF is opened while in operation.
J-E8	00E8	User left cover open	PI3 PI6	The left cover is opened while in operation.
J-E9	00E9	Power down		The voltage from the copier fluctuates while in operation.
J-EA	00EA	Stream reading image leading edge position fault	PI5 S7	In stream reading, the copier does not change the reading potion when the DADF has picked up a large-size original in opposition to instructions for small-size originals.
J-EB (1st original)	00EB			
J-F3	00F3	Belt status	PI1	When switching the state of the belt motor, the belt motor is not in acceleration, constant speed, or deceleration state.
J-F4	00F4	Image leading edge output timing fault	S2 S3 SW301	In stream reading, the image leading edge signal is generated between wait position and image leading edge position.
J-FD	00FD	Last sheet fault	PI1	The belt movement for the last sheet fails.
J-FE	00FE	Error	PI1 PI2 PI11	Jams related to the motor drive mechanism have occurred twice or less.

T02-301-06

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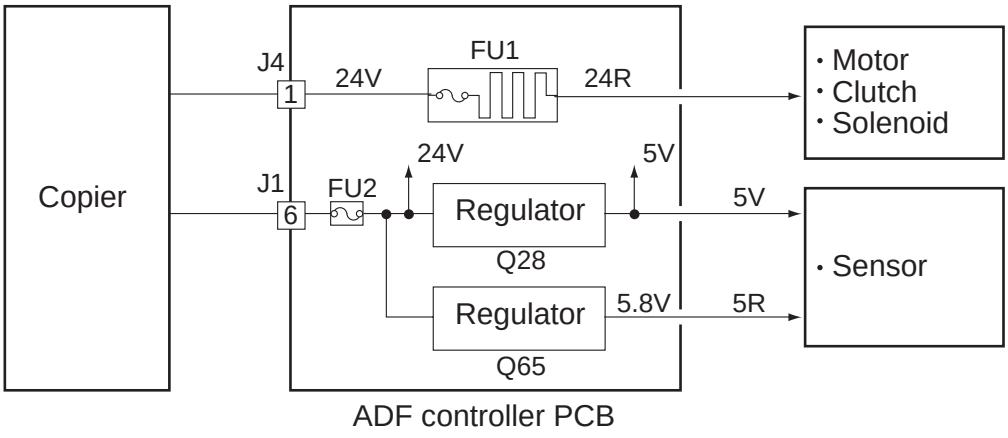
4 Power Supply

The following is an outline of the power supply system.

The DADF's power supply receives from the copier two types of 24 V; one (input to J4-1) is supplied to each load by way of a fuse (FU1), while the other (input to J1-6) is supplied to the sensors and the ADF controller PCB after conversion into 5 V by a regulator (Q28) and into 5.8 V by another regulator (Q65).

The fuse (FU2) operates to cut off the power for protection in the event an overcurrent flows into the circuit.



F02-401-01

CHAPTER 3

MECHANICAL SYSTEMS

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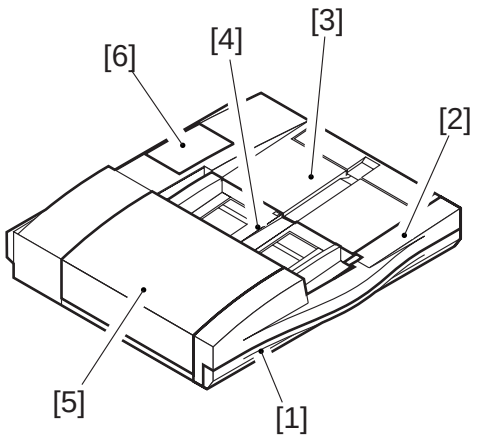
1 Basic Construction

1.1 External Covers

[1] Body front lower cover
[2] Body front cover
[3] Main cover
[4] Original tray
[5] Upper cover
[6] ADF controller cover

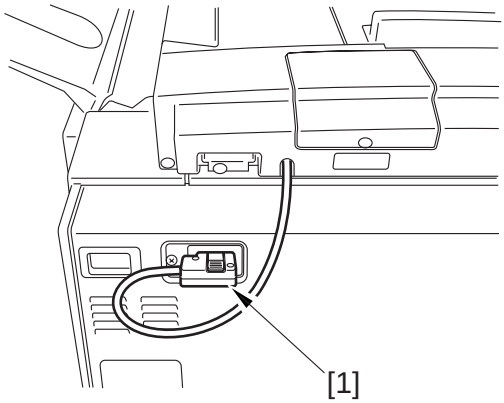


F03-101-01

Detach the covers as needed when cleaning, inspecting, or repairing the inside of the machine.

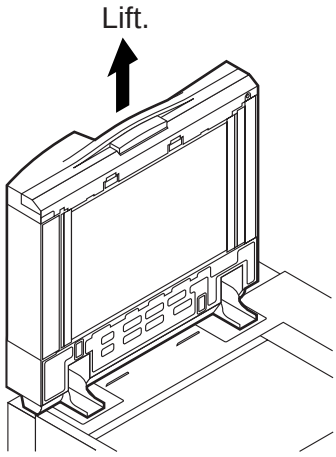
1.1.1 Disconnecting the DADF

1) Turn off the copier.
2) Disconnect the DADF's communication cable [1] from the copier.



F03-101-02

3) Open the DADF fully.
4) Standing at the rear of the copier, lift the DADF to detach.



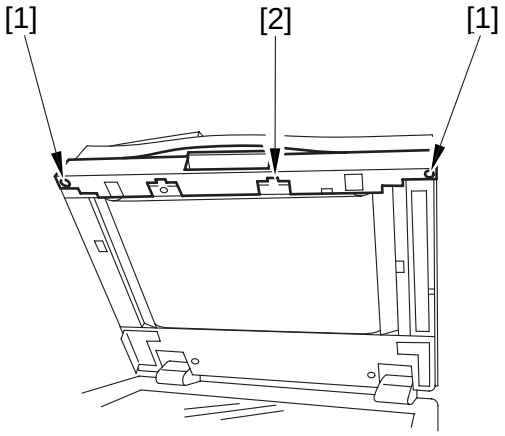
F03-101-03

Memo

The hinge foot is equipped with a locking mechanism, requiring the DADF to be fully opened for removal.

1.1.2 Removing the Front Lower Cover

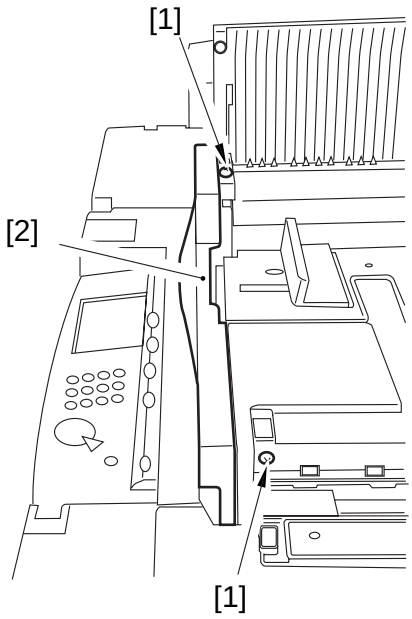
1) Remove the two screws [1], and detach the front lower cover [2] as if to slide it out to the front.



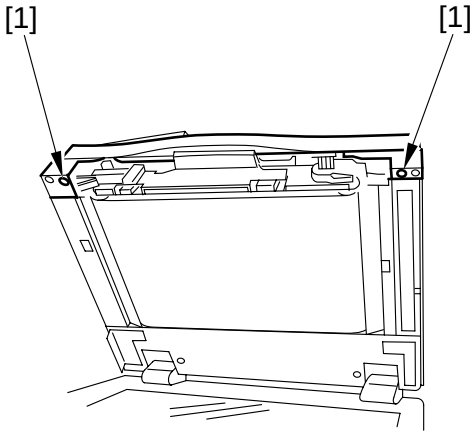
F03-101-04a

1.1.3 Removing the Front Cover

1) Remove the four screws [1], and detach the front cover [2] as if to slide it to the front.



F03-101-04b



F03-101-04c

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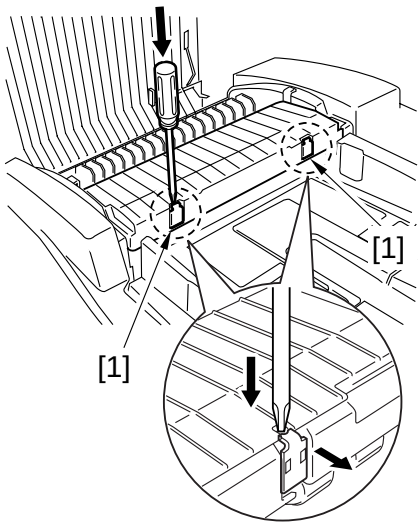
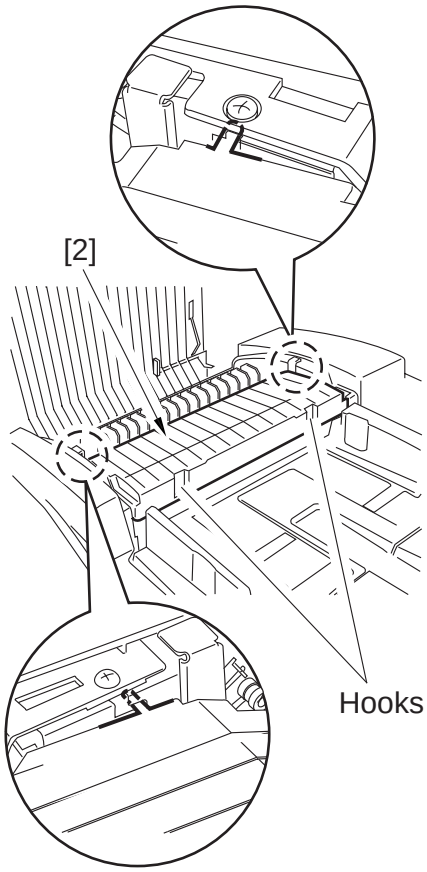
1.1.4 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



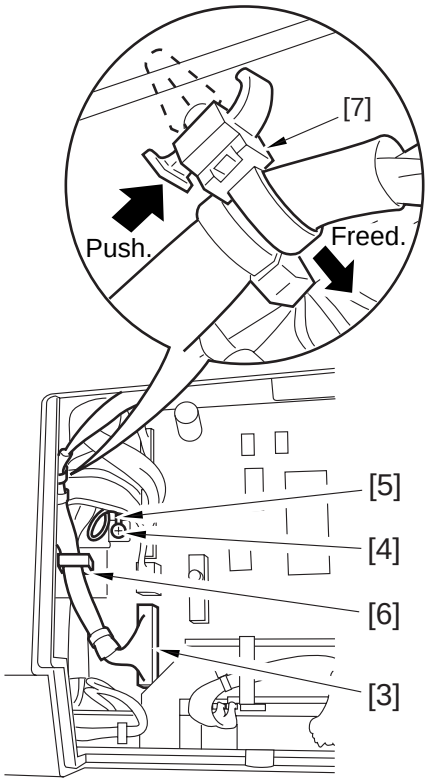
F03-101-05a

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F03-101-05b

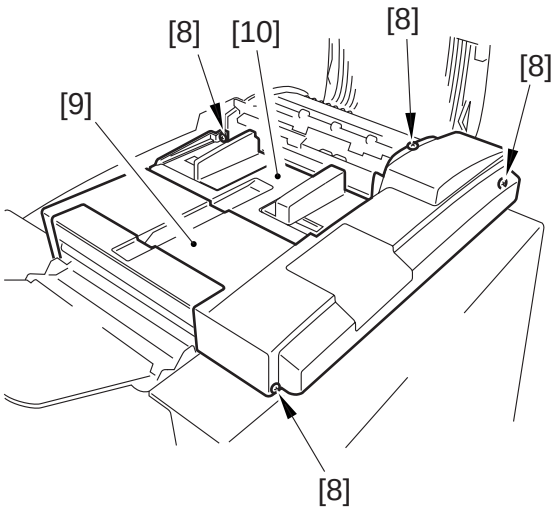
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F03-101-05c

4) Remove the four screws [8], and detach the main cover [9].

The main cover is fitted with the original tray [10], and cables are connected to it. Take extra care when removing it not to damage the cables.



F03-101-06

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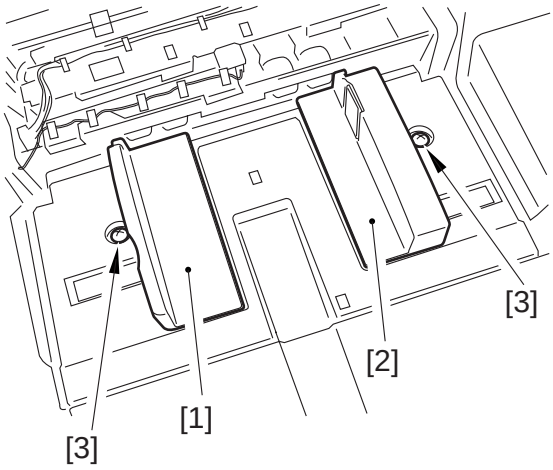
1.1.5 Removing the Original Tray

1) Move the side guides (front) [1]/(rear) [2] to the inside; then, remove the two screws [3], and detach it.

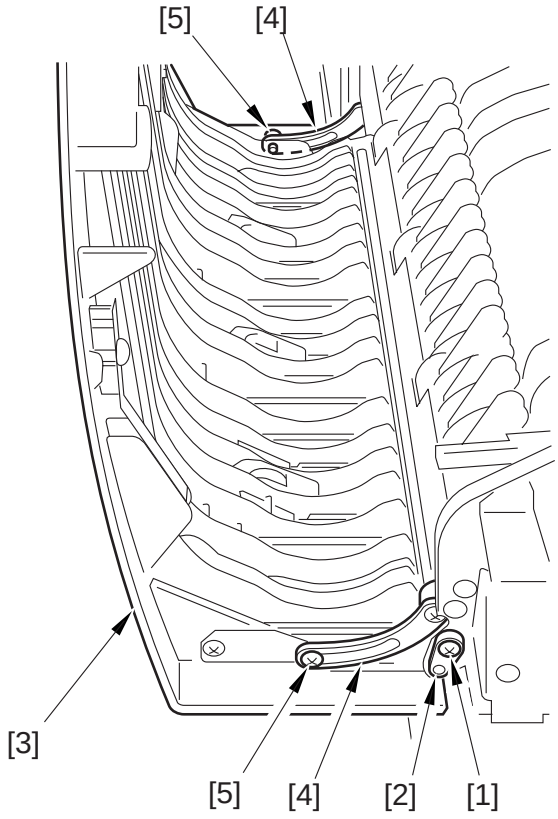
After mounting it, be sure to adjust the horizontal registration.



F03-101-07

1.1.6 Removing the Upper Cover

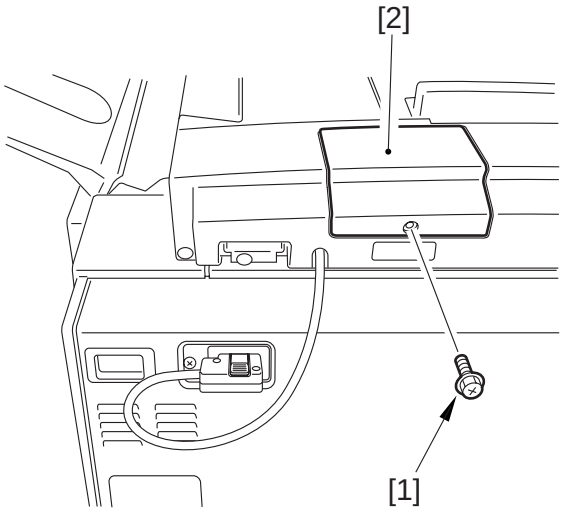
1) Remove the body front cover, and remove the screw [1]; then, remove the positioning pin [2] from the pickup front side plate.
2) Remove the upper cover [3] by removing the stepped screw [5] used to keep the link arm [4] in place, i.e., the one connecting the pickup side plate (front, rear) and the upper cover.



F03-101-08

1.1.7 Removing the ADF Controller Cover

1) Remove the screw [1], and detach the ADF controller cover [2].

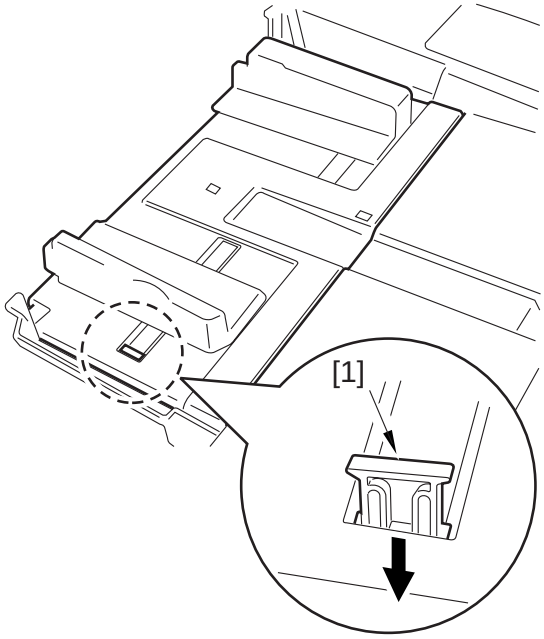


F03-101-09

1.1.8 Side Guide Lock

1) The side guide of the original tray is equipped with a side guide lock; and the side guide lock [1] is fitted in the notch of the original tray.

When the side guide lock is in the notch, the DADF is set to handle A3/A4-size sheets; upon removal, the DADF will handle sheets up to 305 mm in width.



F03-101-10

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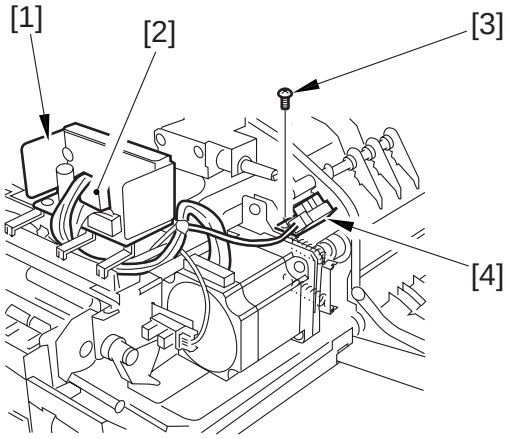
2 Drive System

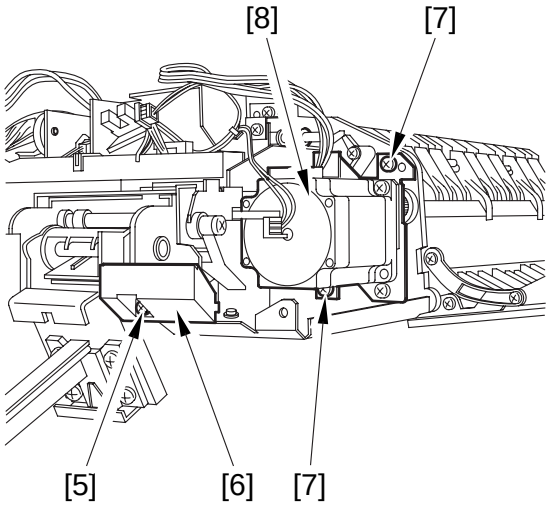
2.1.1 Removing the Reversal Motor Unit

1) Disconnect the connector J602 [2] from the reversal motor driver PCB [1].
2) Remove the screw [3], and detach the pre-reversal sensor base [4].



F03-201-01

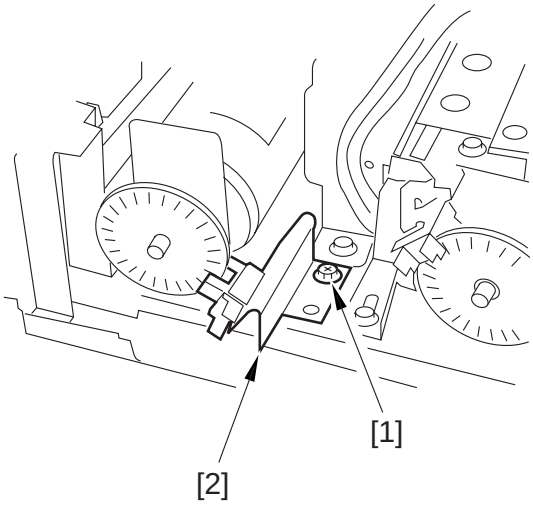
3) Remove the screw [5], and detach the cover [6]; then, remove the two screws [7], and detach the reversal motor unit [8].



F03-201-02

2.1.2 Removing the Separation Motor Unit

1) Remove the screw [1], and detach the separation motor sensor support plate [2].



F03-201-03

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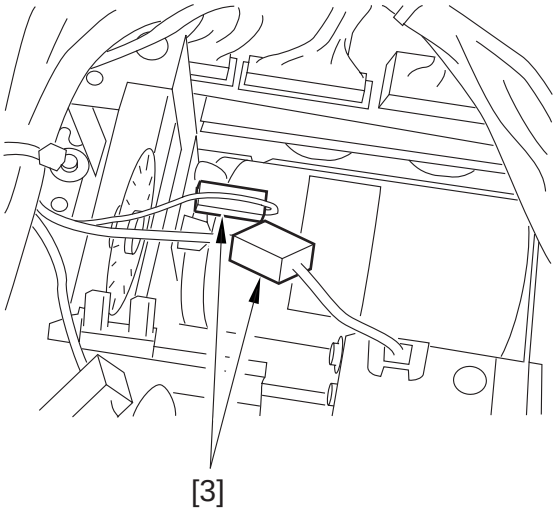
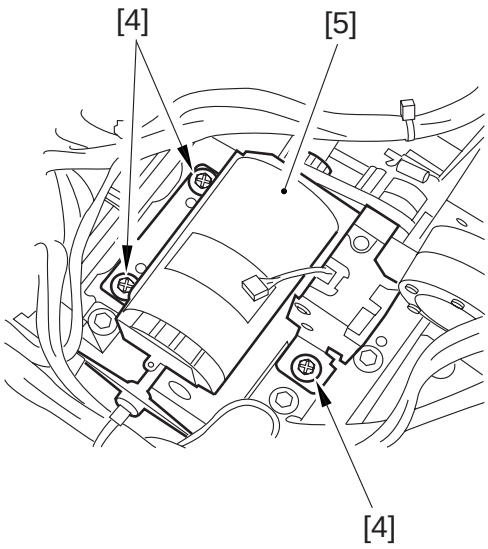
2) Disconnect the two connectors [3].



F03-201-04

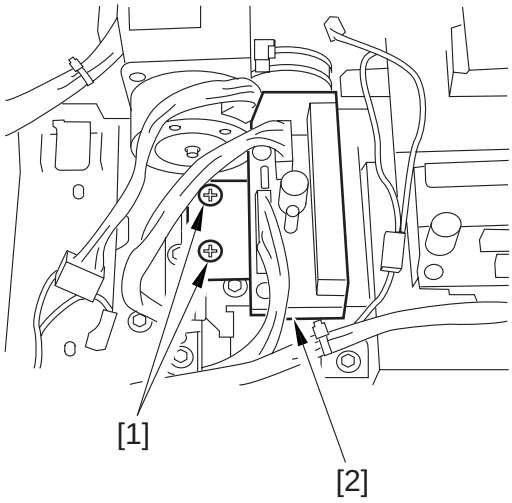
3) Remove the three mounting screws [4], and detach the separation motor unit [5].



F03-201-05

2.1.3 Removing the Pickup Motor Unit

1) Remove the separation motor unit.
2) Remove the two screws [1], and detach the belt motor driver PCB unit [2].



F03-201-06

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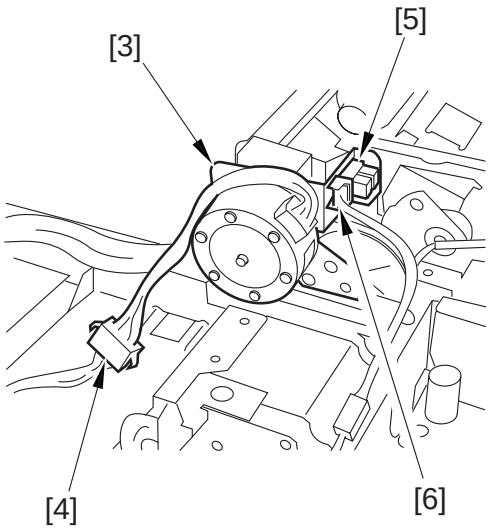
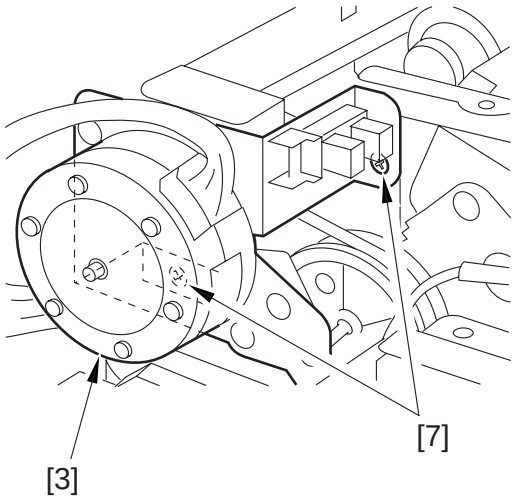
3) Disconnect the connector [4] of the pickup motor unit [3] and the connector [7] of the open/closed sensor (rear) [5].



F03-201-07

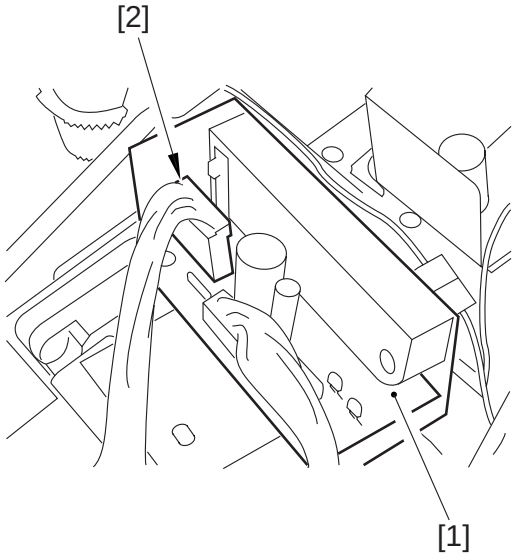
4) Remove the two mounting screws [7], and detach the pickup motor unit [3].



F03-201-08

2.1.4 Removing the Belt Motor Unit

1) Remove the separation motor unit and the pickup motor unit.
2) Disconnect the connector J72 [2] of the belt motor driver PCB [1].



F03-201-09

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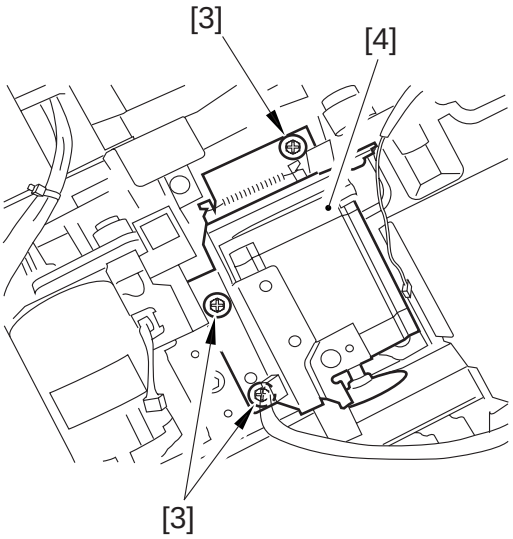
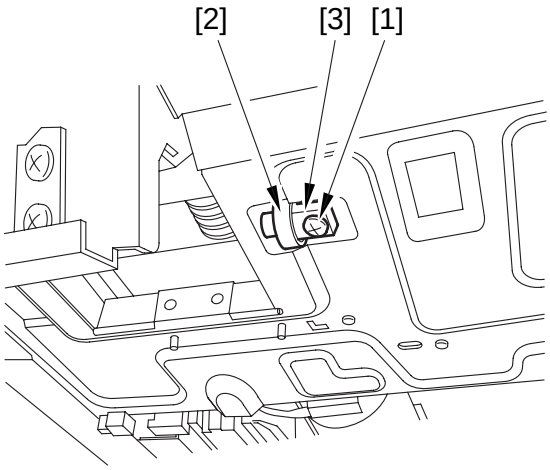
3) Remove the three screws [3], and detach the belt motor unit [4].



F03-201-10

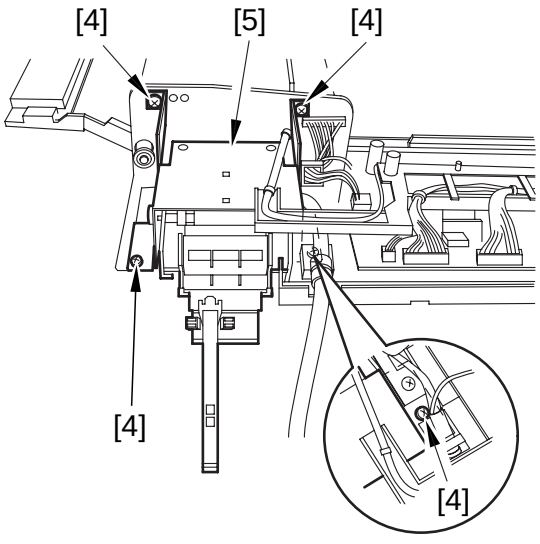
2.1.5 Removing the Delivery Motor

1) Remove the main cover.
2) Remove the screw [1] from the bottom of the DADF, and remove the bearing [2] and the rod [3].



F03-201-11

3) Remove the four screws [4], and detach the hinge (right) [5].



F03-201-12

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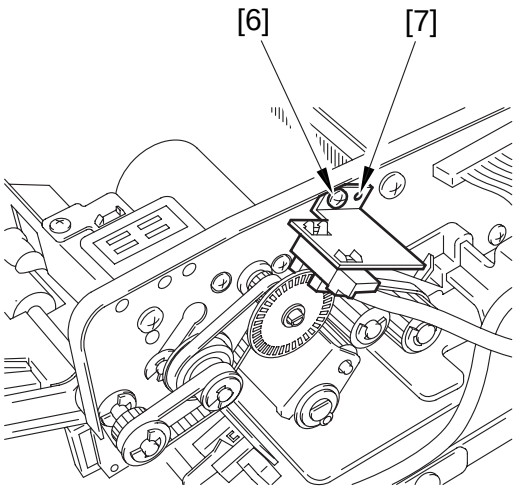
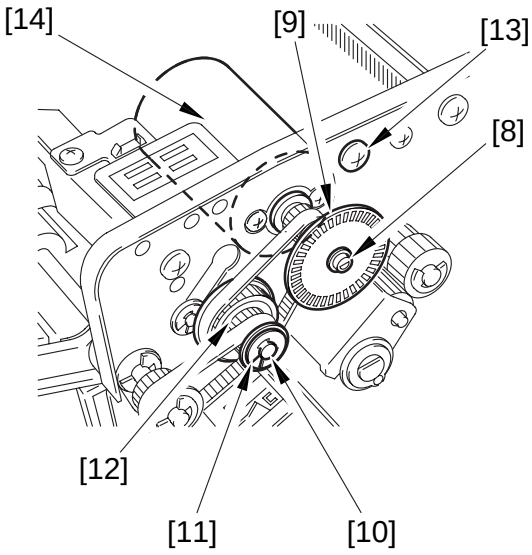
4) Remove the screw [6], and detach the delivery motor sensor [7].



F03-201-13

5) Remove the grip ring [8], and detach the lock plate [9].
6) Remove the E-ring [10], and remove the belt retaining washer [11] and the gear [12].
7) Remove the screw [13], and detach the delivery motor [14].

If you have replaced the delivery motor, be sure to adjust the sensor and the delivery motor.

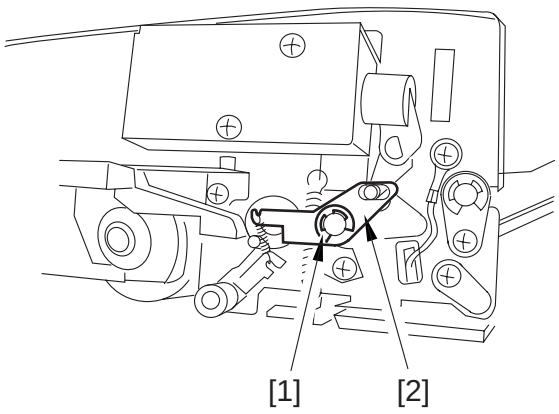


F03-201-14

3 Feeding System

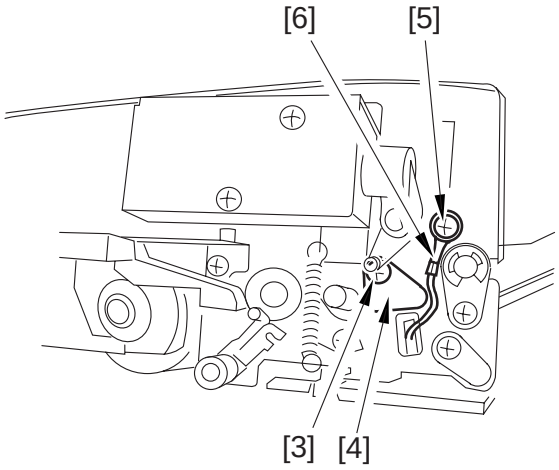
3.1.1 Removing the Delivery Roller

1) Remove the body front cover. (F03-101-04b,c)
2) Remove the main cover. (F03-101-05a,b)
3) Remove the E-ring [1], and detach the solenoid link arm [2].



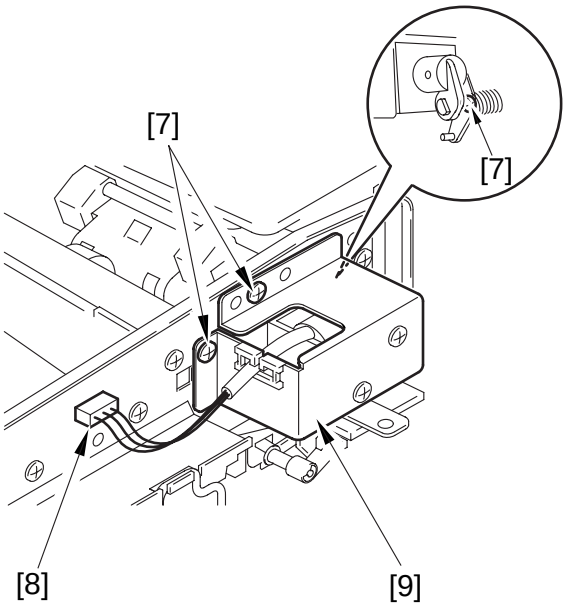
F03-301-01

4) Remove the screw [3], and detach the delivery guide plate [4].
5) Remove the screw [5], and free the grounding wire [6] of the static eliminator attached to the delivery guide.



F03-301-02a

6) Remove the three screws [7], and disconnect the connector [8]; then, detach the solenoid unit [9] from the delivery assembly front side plate.



F03-301-02b

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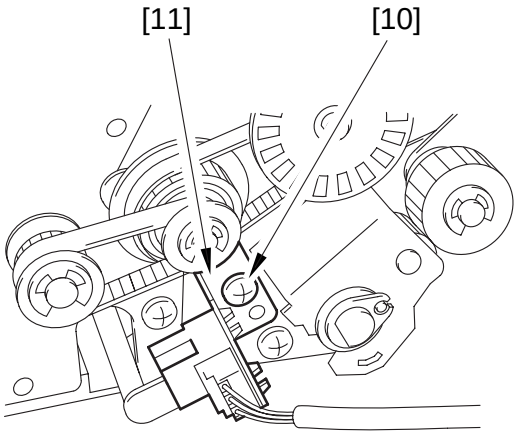
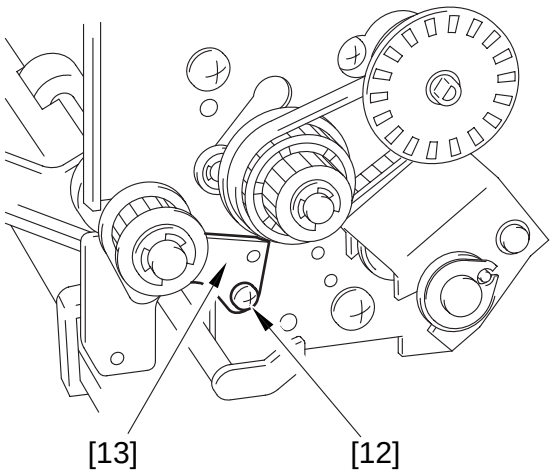
7) Remove the screw [10], and detach the delivery sensor support plate [11] on the delivery assembly rear side plate side.



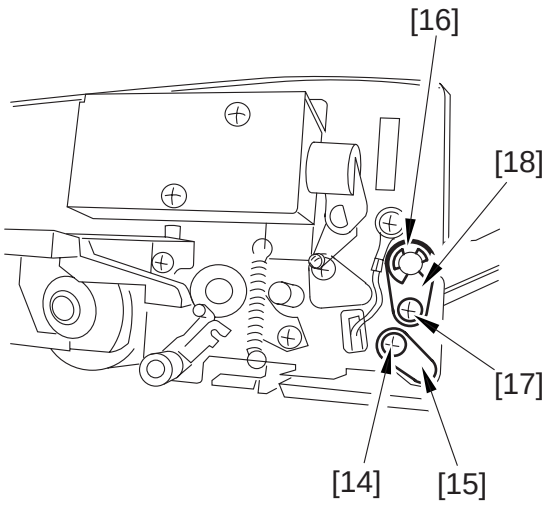
F03-301-03

8) Remove the screw [12], and detach the delivery guide support plate [13] on the delivery assembly rear side plate side.



F03-301-04

9) Remove the screw [14], and detach the delivery lower guide support plate [15] on the delivery assembly front plate side.
10) Remove the E-ring [16] from the delivery assembly front plate side; then, remove the screw [17], and detach the bushing [18].



F03-301-05

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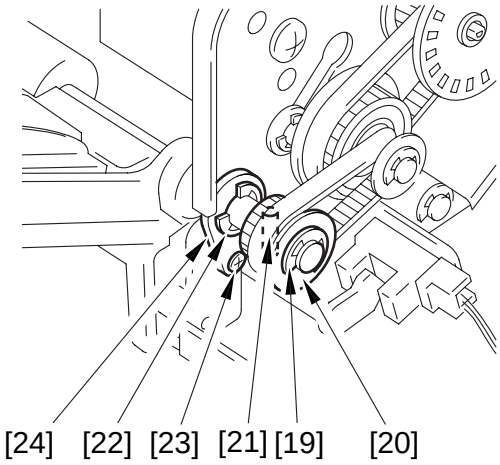
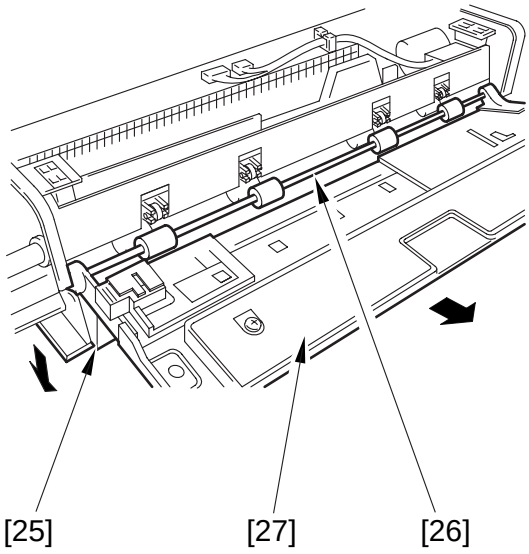
11) Remove the E-ring [19] from the delivery assembly rear side plate side; then, remove the gear [20] and the parallel pin [21].
12) Remove the E-ring [22]; then, remove the screw [23] and the bushing [24].



F03-301-06

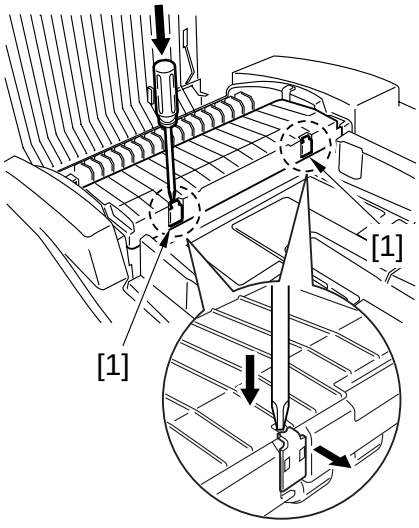
13) Shift down the delivery lower guide [25], and slide out the delivery roller [26] together with the manual feed tray [27].



F03-301-07

3.1.2 Removing the Pickup Roller

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



F03-301-08a

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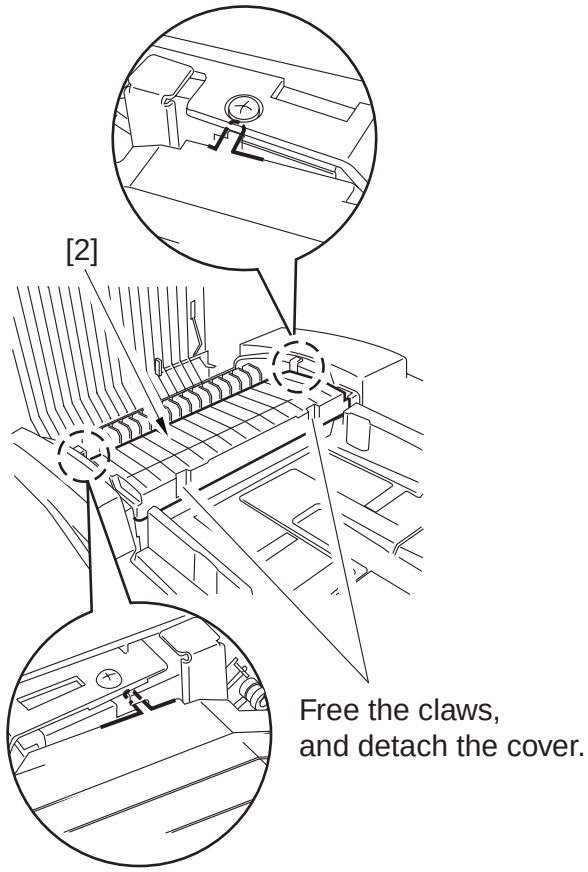
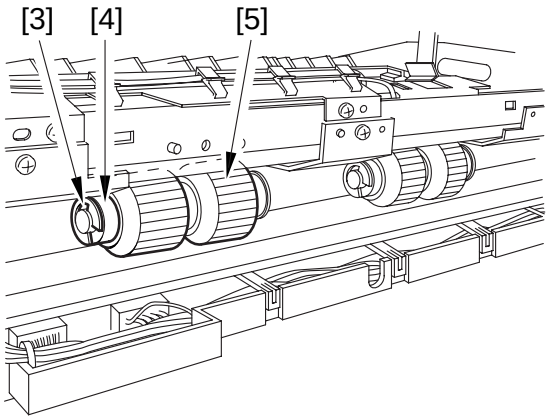
2) Remove pickup assembly cover [2].



F03-301-08b

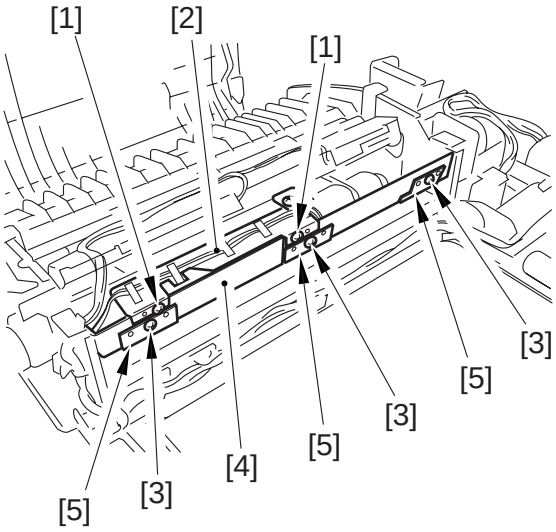
3) Remove the resin E-ring [3]; then, remove the roller arm [4], and detach the pickup roller [5].



F03-301-08c

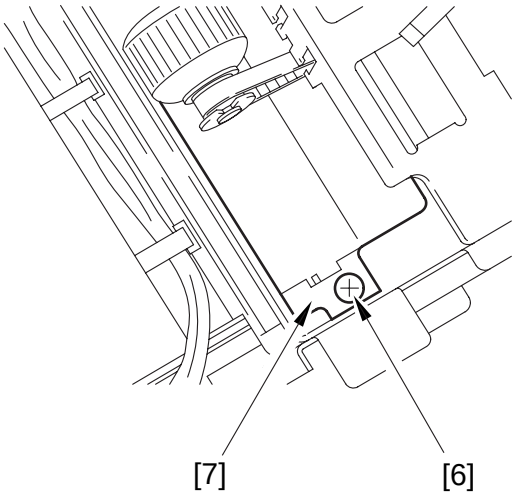
3.1.3 Removing the Separation Roller

1) Remove the pickup assembly cover. (F03-301-08a)
2) Remove the two screws [1], and detach the sensor stay [2].
3) Remove the three screws [3], and detach the three guide plates [5] from the right stay [4].

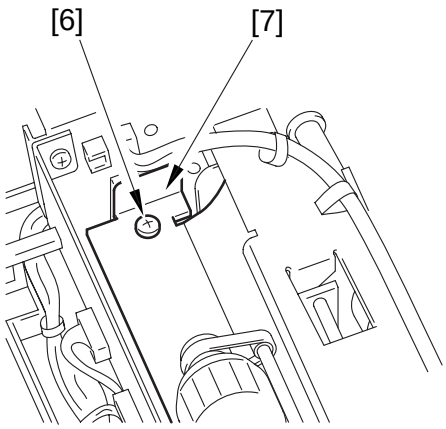


F03-301-09

4) Remove the two screws [6], and detach the lower guide [7].



F03-301-10a



F03-301-10b

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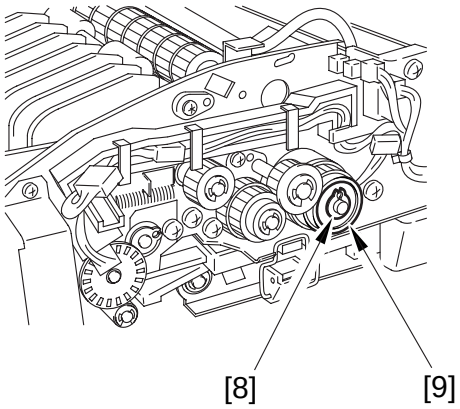
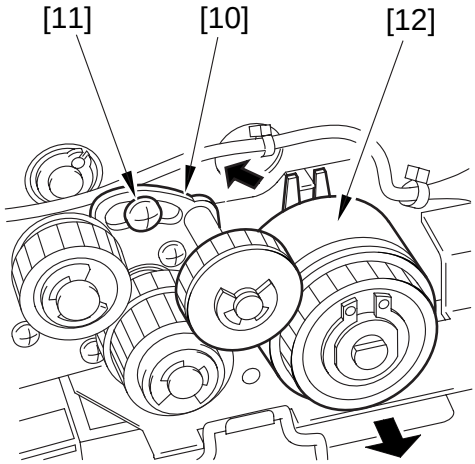
5) Remove the grip ring [8] on the front side plate side, and pull out the clutch ring [9].



F03-301-11

6) Remove the screw [11] of the gear support plate (front) [10]; then, shift the gear support plate (front) [10] to the left to pull out the clutch [12] to the front.



F03-301-12

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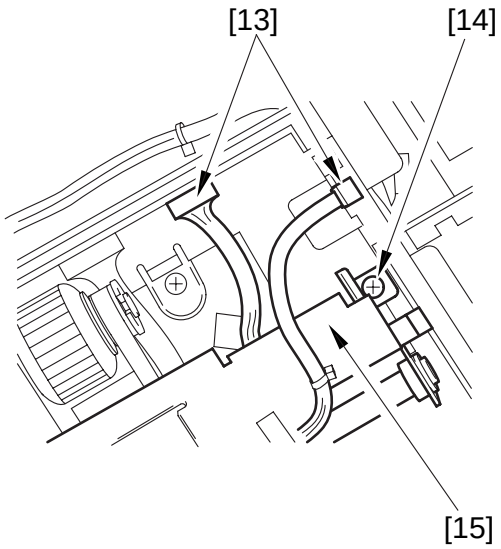
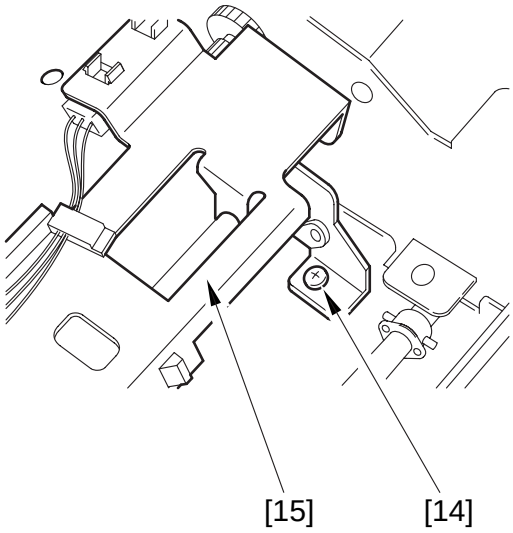
7) Disconnect the two connectors [13], and remove the two mounting screws [14]; then, detach the separation unit [15].

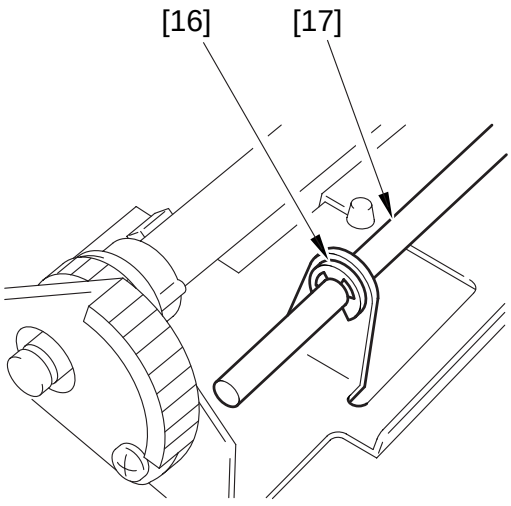


F03-301-13a



F03-301-13b

8) Remove the E-ring [16], and pull out the shaft [17].



F03-301-14

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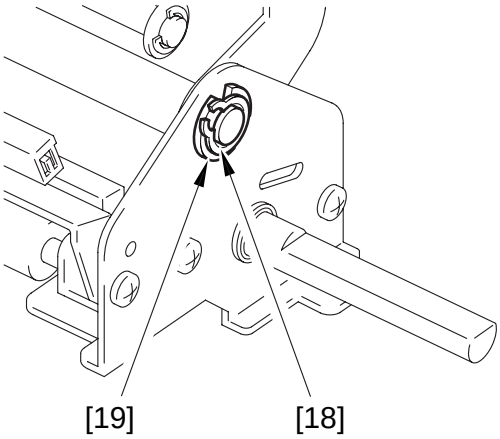
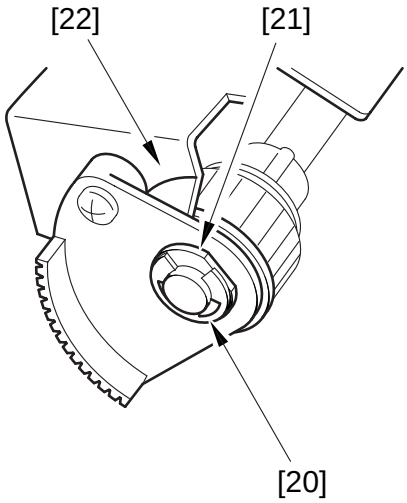
9) Remove the grip ring [18] at the front, and remove the bushing [19].



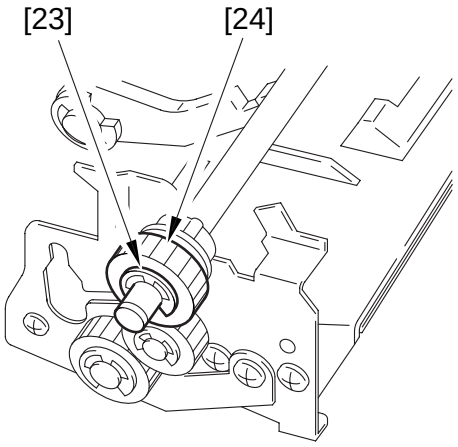
F03-301-15

10) Remove the E-ring [20] and the bushing [21] at the rear, and detach the rod arm plate [22].



F03-301-16

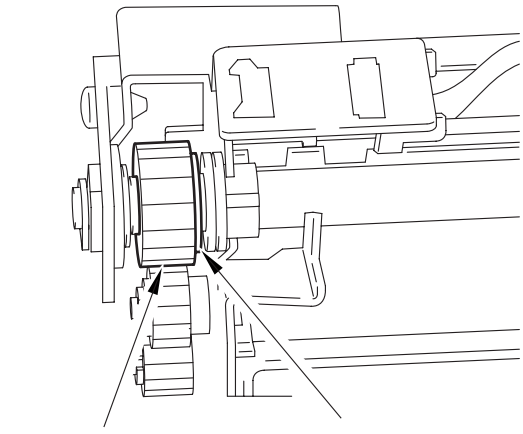
11) Remove the E-ring [23] and the one-way gear [24].



F03-301-17

12) Remove the separation roller.

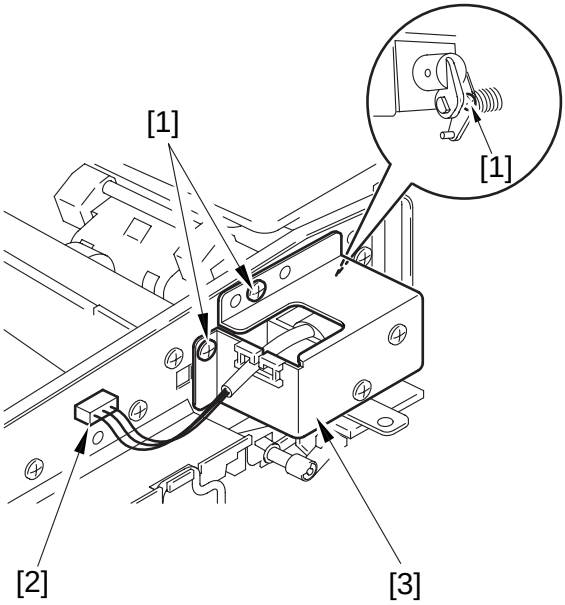
When mounting the one-way gear, be sure that the protrusion faces inside.



F03-301-18

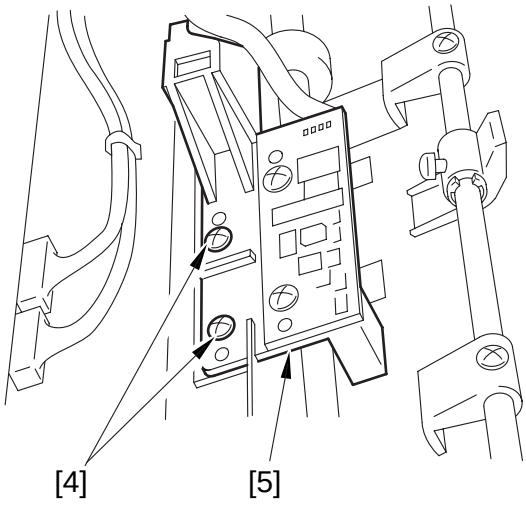
3.1.4 Removing the Manual Feed Registration Roller

1) Remove the body front cover. (F03-101-04b,c)
2) Remove the main cover. (F03-101-05)
3) Remove the three screws [1], and disconnect the connector [2]; then, remove the solenoid unit [3] from the delivery assembly front side plate.



F03-301-19

4) Remove the two screws [4], and detach the manual feed registration sensor PCB assembly [5].



F03-301-20

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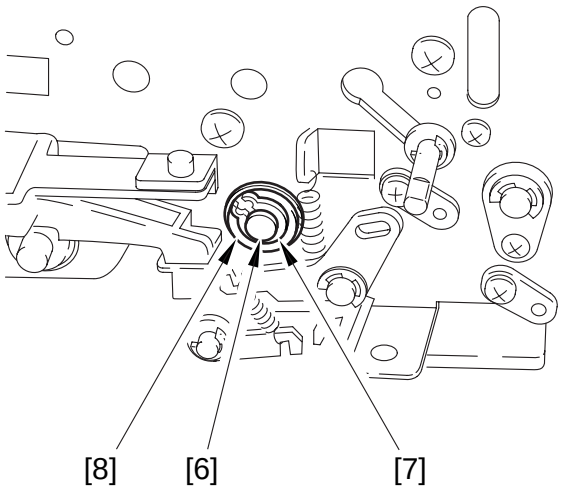
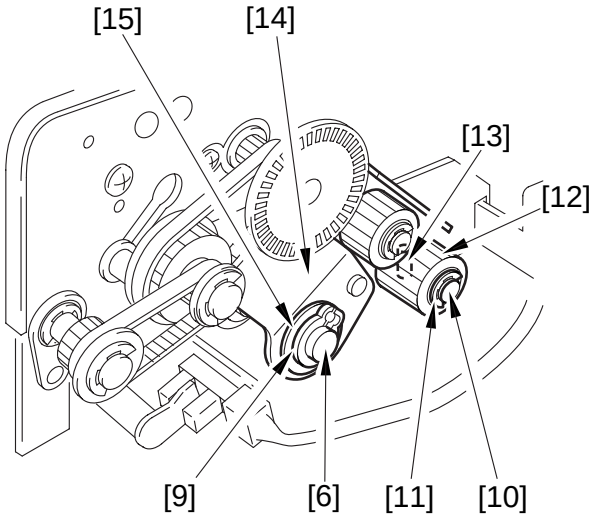
5) Remove the grip ring [8] and the bearing [9] from the manual feed registration roller [6]. (delivery assembly front side plate)



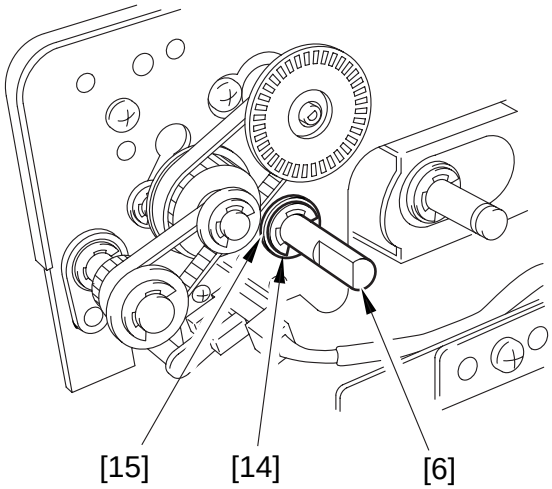
F03-301-21

6) Remove the grip ring [9] of the manual feed registration roller [6], and remove the E-ring [11] of the feeding belt roller shaft [10]; then, remove the gear [12] and the parallel pin [13]. Thereafter, remove the gear unit [14] and the bushing [15].



F03-301-22

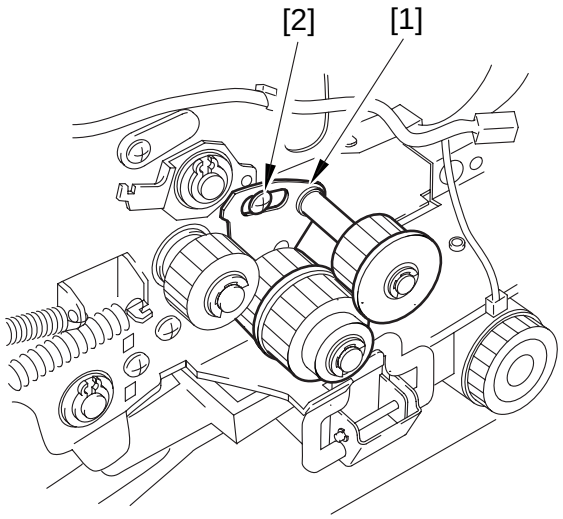
7) Remove the E-ring [14] and the bearing [15] of the manual feed registration roller [6] (delivery assembly rear plate); then, pull out the manual feed registration roller [6].



F03-301-23

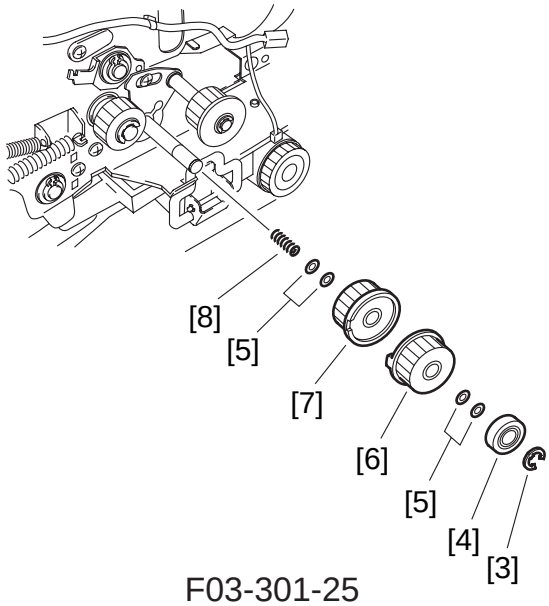
3.1.5 Removing the Feeding (pull-off) Roller

1) Remove the mounting screw [2] of the gear support plate [1] of the pickup front side plate.



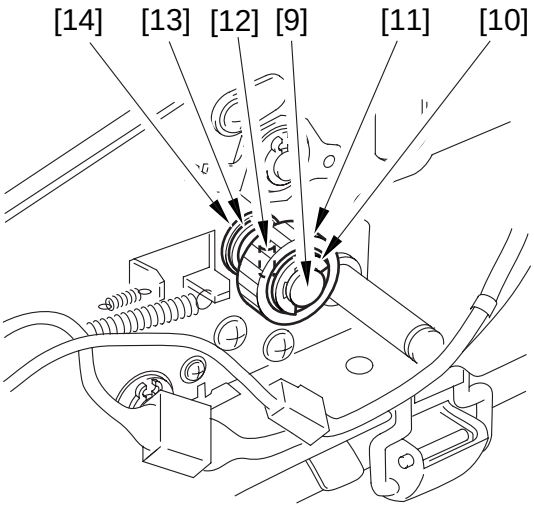
F03-301-24

2) Remove the E-ring [3], washer [4], two shims [5], gear (black) [6], gear (white) [7], two shims [5], and spring [8] in sequence.



F03-301-25

3) Remove the gear support plate of the front side plate.
4) Remove the E-ring [10], gear [11], parallel pin [12], grip ring [13], and bearing [14] of the feeding (pull-off) roller [9] (front side plate).



F03-301-26

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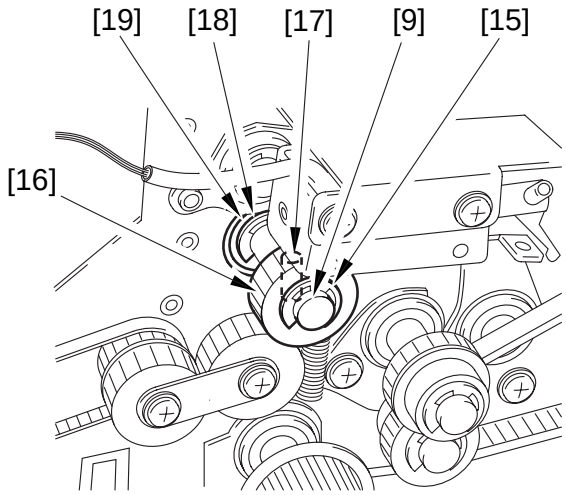
5) Remove the E-ring [15], gear [16], parallel pin [17], E-ring [18], and bearing [19] of the feeding (pull-off) roller [9] (rear side plate); then, remove the feeding (pull-off) roller [9].

The gear holds a pin. Take care not to drop it.



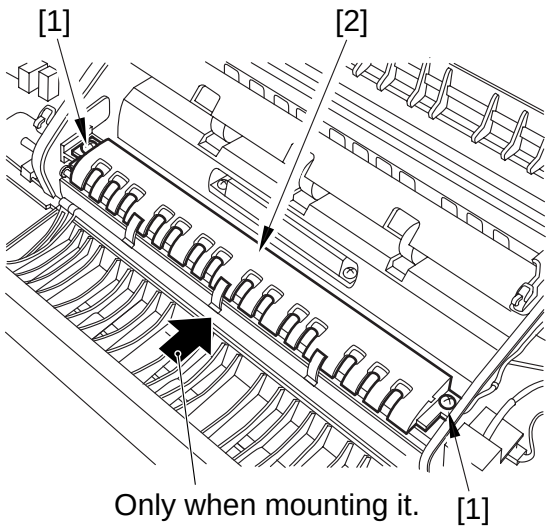
F03-301-27

3.1.6 Removing the Registration Roller

1) Remove the two screws [1], and detach the reversing guide [2].

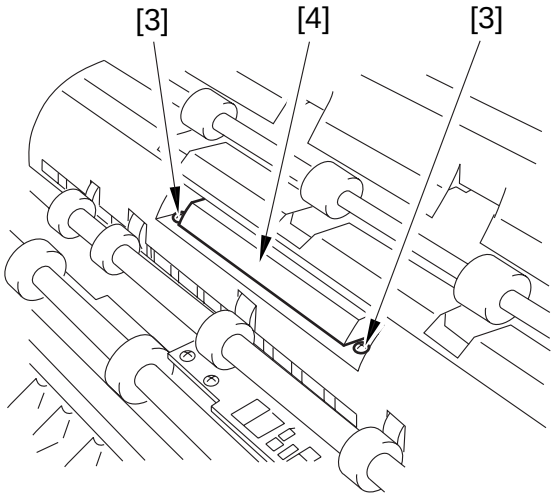
When mounting the reversing guide, do so while forcing it in the direction of the arrow. If not mounted properly, it can trigger jams.

2) Remove the two screws [3], and detach the registration sensor PCB [4].



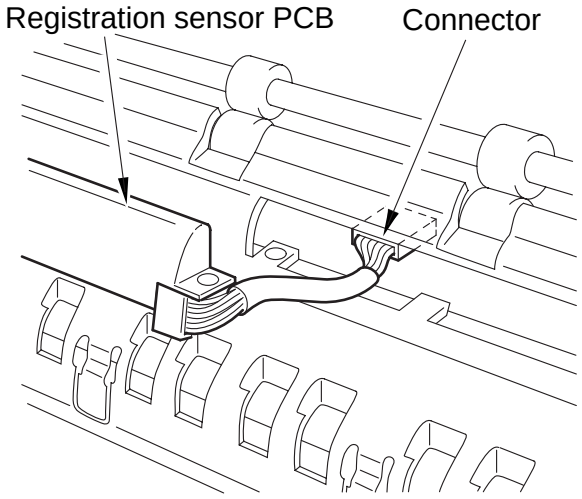
F03-301-28

2) Remove the two screws [3], and detach the registration sensor PCB [4].



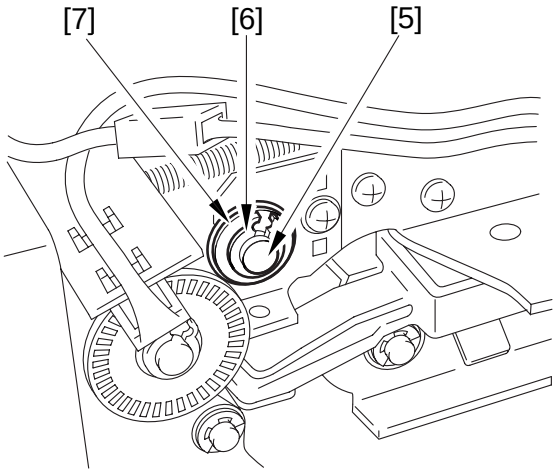
F03-301-29

When removing the registration sensor PCB, be sure to disconnect the connector of the cable connected to it.



F03-301-30

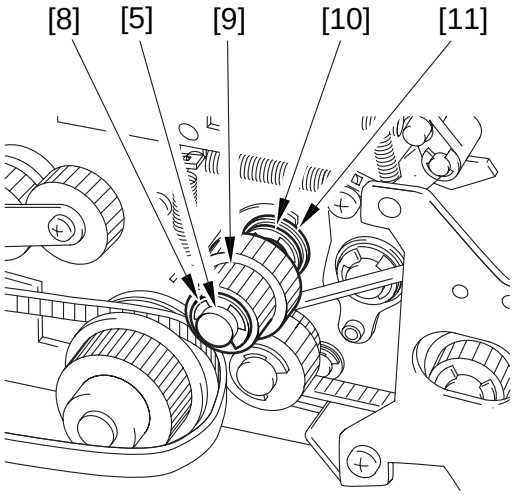
3) Remove the grip ring [6] and the bearing [7] of the registration roller [5] (front side plate).



F03-301-31

4) Remove the E-ring [8], gear [9], E-ring [10], and bearing [11] of the registration roller [5] (rear side plate).

The gear holds a pin. Take care not to lose it when removing the gear.



F03-301-32

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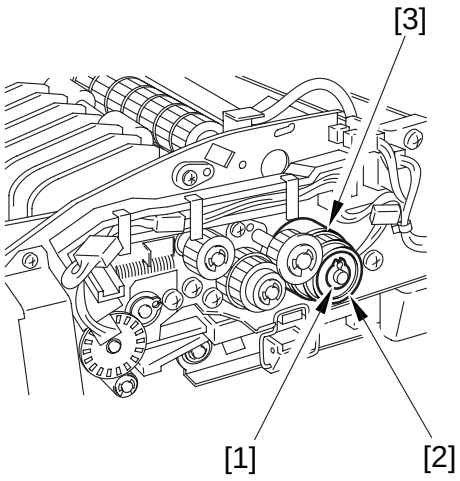
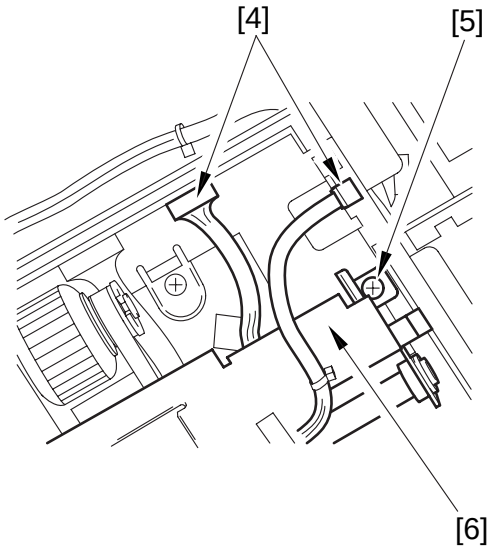
3.1.7 Removing the Separation Belt

1) Remove the two screws, and loosen the separation unit.
2) Remove the grip ring [1] at the front; then, remove the clutch ring [2] and the clutch [3].

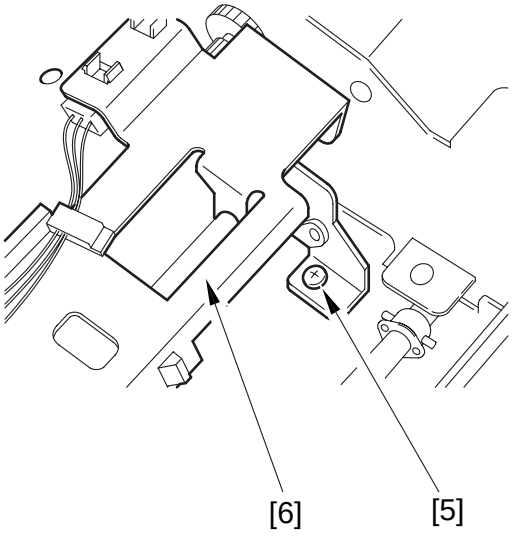


F03-301-33

3) Disconnect the two connectors [4], and remove the two screws [5]; then, detach the separation unit [6].

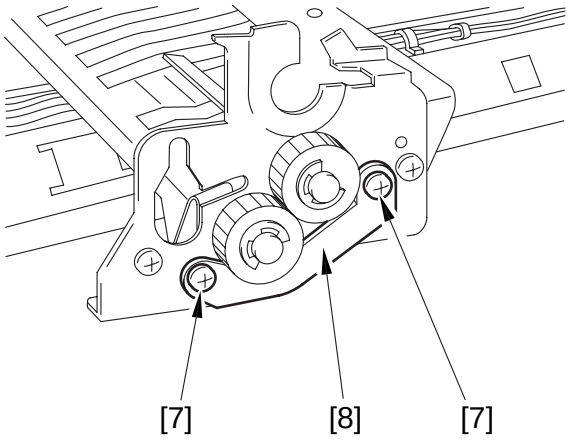


F03-301-34a



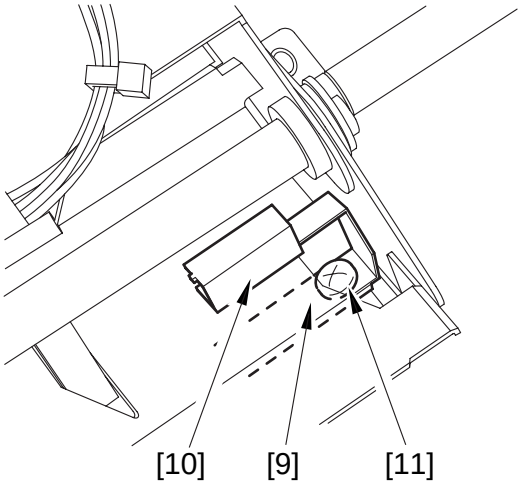
F03-301-34b

4) Remove the two mounting screws [7], and detach the separation auxiliary plate [8].



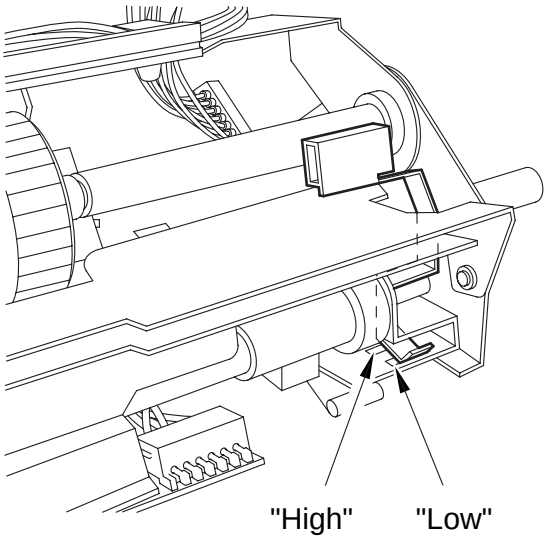
F03-301-35

5) Loosen the screw [11] on the separation pressure adjusting lever [10] of the separation roller [9].



F03-301-36a

When mounting the separation pressure adjusting lever, be sure that the lever is set to “Low.”



F03-301-36b

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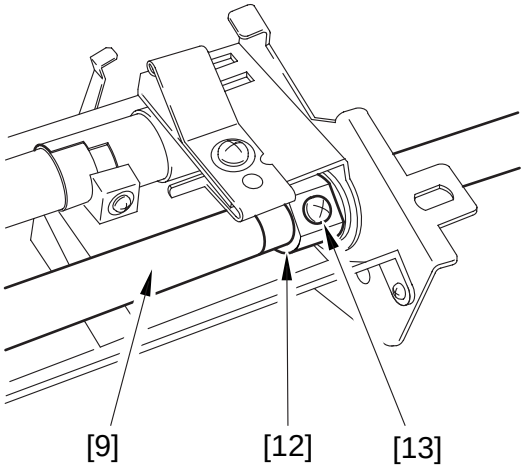
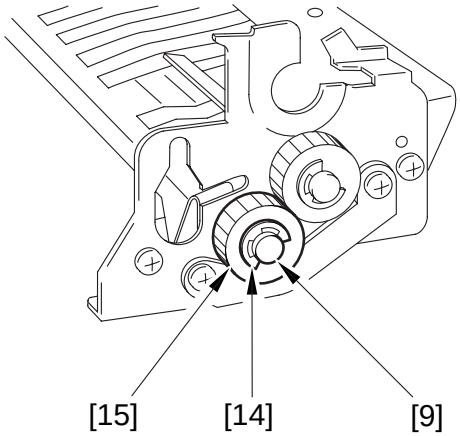
6) Loosen the screw [13] on the thrust stopper [12] of the separation roller [9].



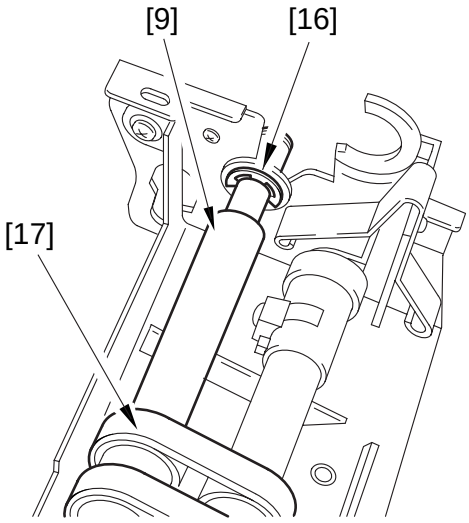
F03-301-36c

7) Remove the E-ring [14] and the gear [15] at the rear of the separation roller [9].



F03-301-37

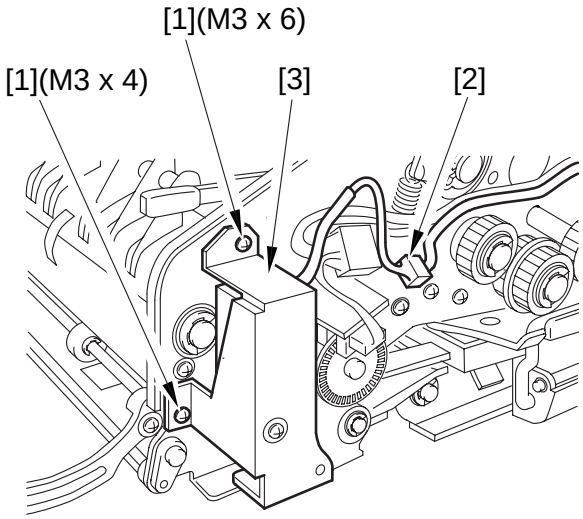
8) Remove the E-ring at the rear of the separation roller [9] to detach the separation belt [17].



F03-301-38

3.1.8 Removing the Reversing Roller

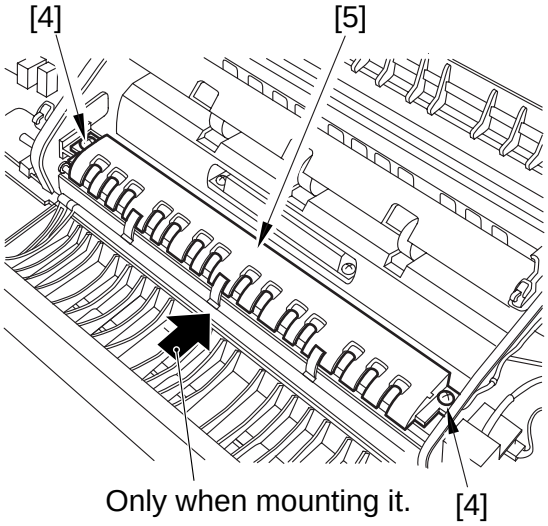
1) Remove the reversal motor unit. (F03-201-01)
2) Remove the two screws [1] of the pickup front side plate, and disconnect the connector [2]; then, detach the pre-reversal solenoid unit [3].



F03-301-39

3) Remove the two screws [4], and detach the reversing guide [5].

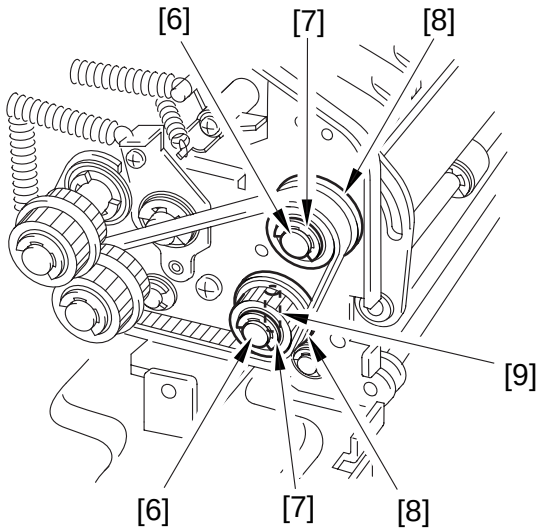
When mounting the reversing guide, do so while forcing it in the direction of the arrow. If not properly mounted, it can trigger jams.



F03-301-40

4) Remove the E-ring [8], gear [8], and parallel pin [9] on the rear side plate side of the reversing roller [6] (2 pc.).

The gear holds a pin. Take care not to lose it when removing the gear.



F03-301-41

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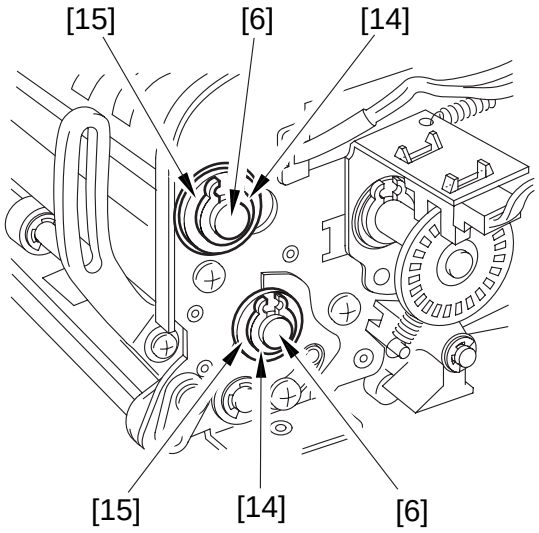
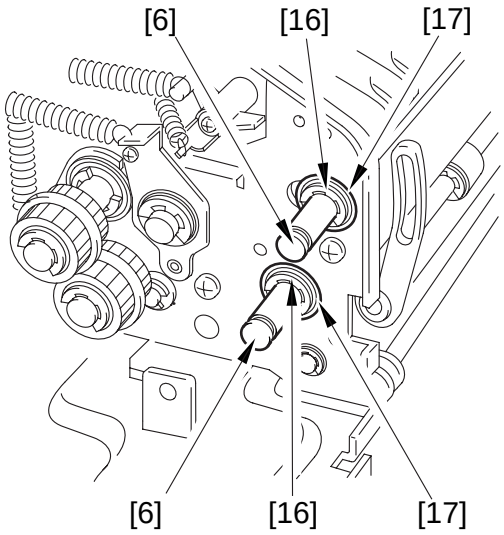
5) Remove the grip ring [14] and the bearing [15] on the front side plate side of the reversing roller [6] (2 pc.), and remove the E-ring [16] and the bearing [17] on the rear side plate side.
6) Pull out the reversing roller [6].



F03-301-42a

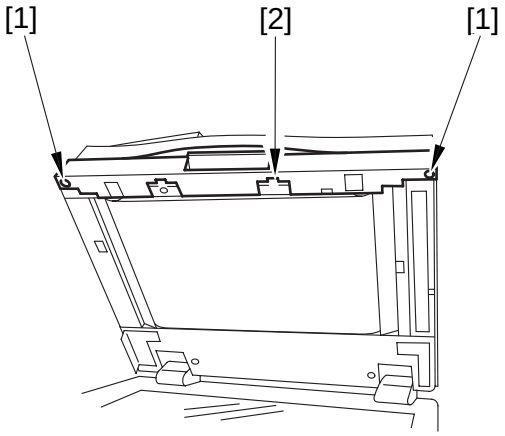


F03-301-42b

4 Replacing the Feeding Belt

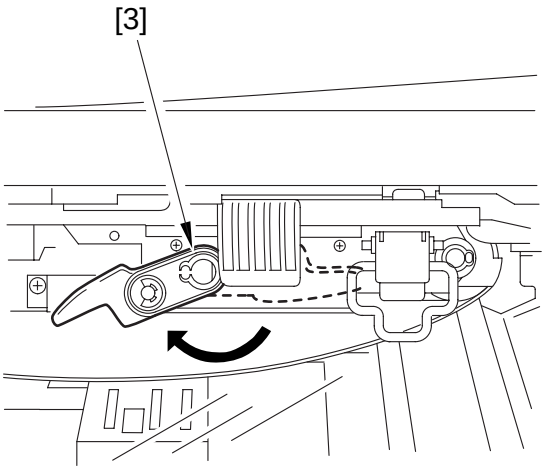
4.1.1 Removing the Feeding Belt

1) Remove the two screws [1], and detach the front lower cover [2].



F03-401-01

2) Turn the releasing lever [3] clockwise to decrease the tension of the belt.



F03-401-02

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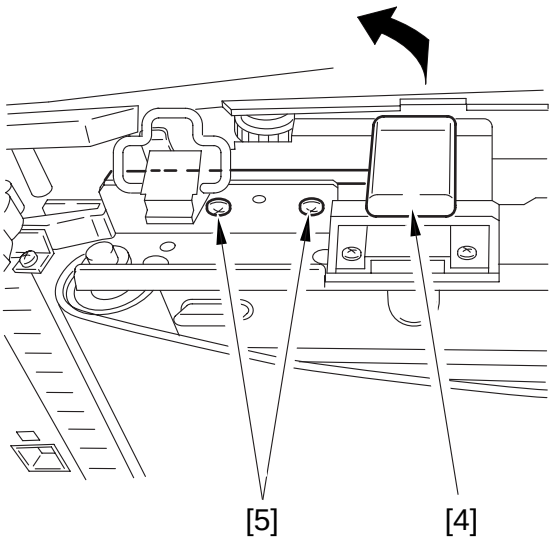
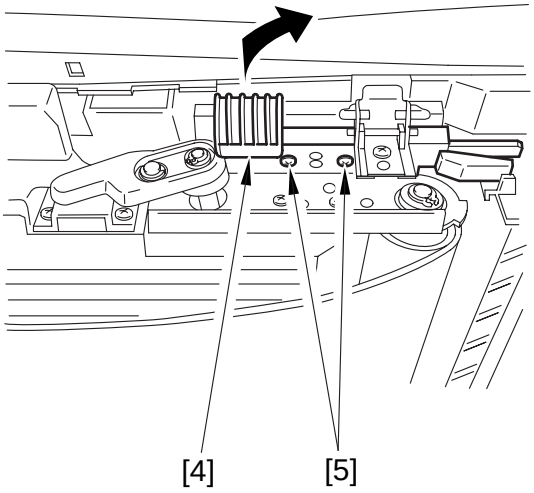
3) Remove the mounting screws [5] (2 pc. each), and open the left/right arm [4].

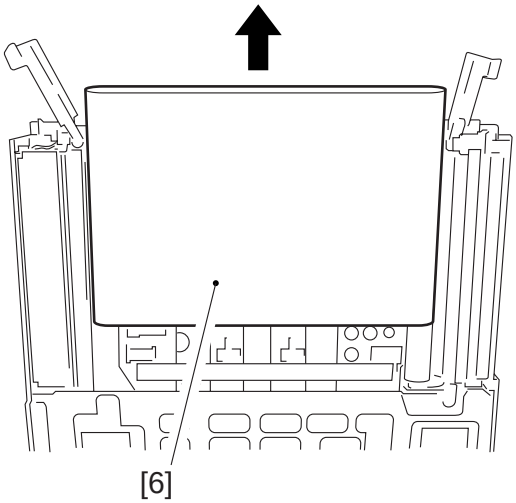


F03-401-03a



F03-401-03b

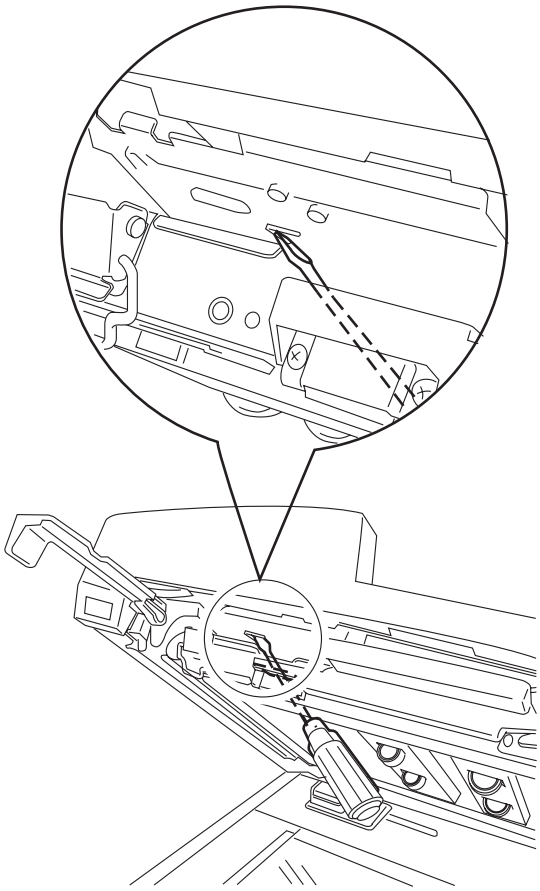
4) Detach the feeding belt [6].



F03-401-04

4.1.2 Attaching the Feeding Belt

1) Insert a screwdriver between the DADF and the feeding assembly as shown to increase the gap.
2) Fit in the feeding belt, and pull out the screwdriver when the belt has come into contact with it; then, push in the belt.



F03-401-05

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CHAPTER 4

MAINTENANCE AND INSPECTION

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1 Periodically Replaced Parts

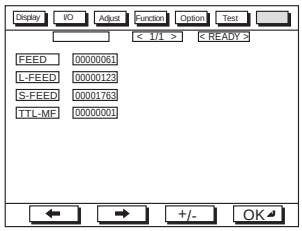
The DADF does not have parts that need to be replaced on a periodical basis.

2 Durables

Some parts of the DADF may require replacement once or more over the period of product warranty because of wear or damage. Replace them as needed by referring to the following guide, in which the life of each part is expressed in terms of the number of originals (may be checked in the copier's service mode).

As of February 2001

No.	Part name	Part No.	Q'ty	Estimated life	Remarks
1	Feeding belt	FB5-9541	1	200,000 sheets	Actual number of sheets
2	Pickup roller	FB4-7640	2	250,000 sheets	The actual number of originals
3	Feeding roller*	FG6-7723 (separation unit)	1	250,000 sheets	handled may be checked in the copier's service mode (the sum of L-FEED and S-FEED under COPIER>COUNTER>Feeder).
		FG6-7725 (feeding roller unit)	1		
4	Separation belt*	FG6-7723 (separation unit)	1	250,000 sheets	
		FF6-7724 (separation belt)	11		



*It is recommended that replacement be on a separation unit basis (FG6-7723). However, they (FG6-7725, FE6-7724) may be replaced on their own.

T04-201-01

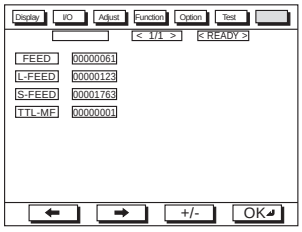
The above values are estimates only, and are subject to change based on future data.

3 Scheduled Servicing Chart

Do not use solvents or oils not indicated.

△ : Clean ● : Replace × : Lubricate □ : Adjust ◎ : Inspect

Ref.	Part name	Interval every 100,000 or 6 mo	Interval every 200,000 or 1 yr	Remarks
1	Copyboard glass	△		All in reference to the copier are in terms of the actual number of sheets used. The actual number of sheets may be checked in the copier's service mode.
2	Original feeding belt		△	
3	Original training edge sensor (S7)		△	
4	Pre-last original sensor (S7)		△	
5	Original sensor (S6)		△	
6	Separation paper sensor (s4)		△	
7	Skew paper sensor (S5)		△	
8	Pre-registration roller paper sensor (S2)		△	
9	Post-registration roller paper sensor (S3)		△	
10	Reversal paper sensor (S1)		△	
11	Manual registration roller paper sensor (S9)		△	
12	Pickup roller	△		
13	Feeding roller	△		
14	Separation belt	△		
15	Pull-off roller		△	
16	Registration roller		△	
17	Reversing roller A, member		△	
18	Reversing roller B, member		△	
19	Manual feed roller, member		△	
20	Delivery roller, member		△	



T04-301-01

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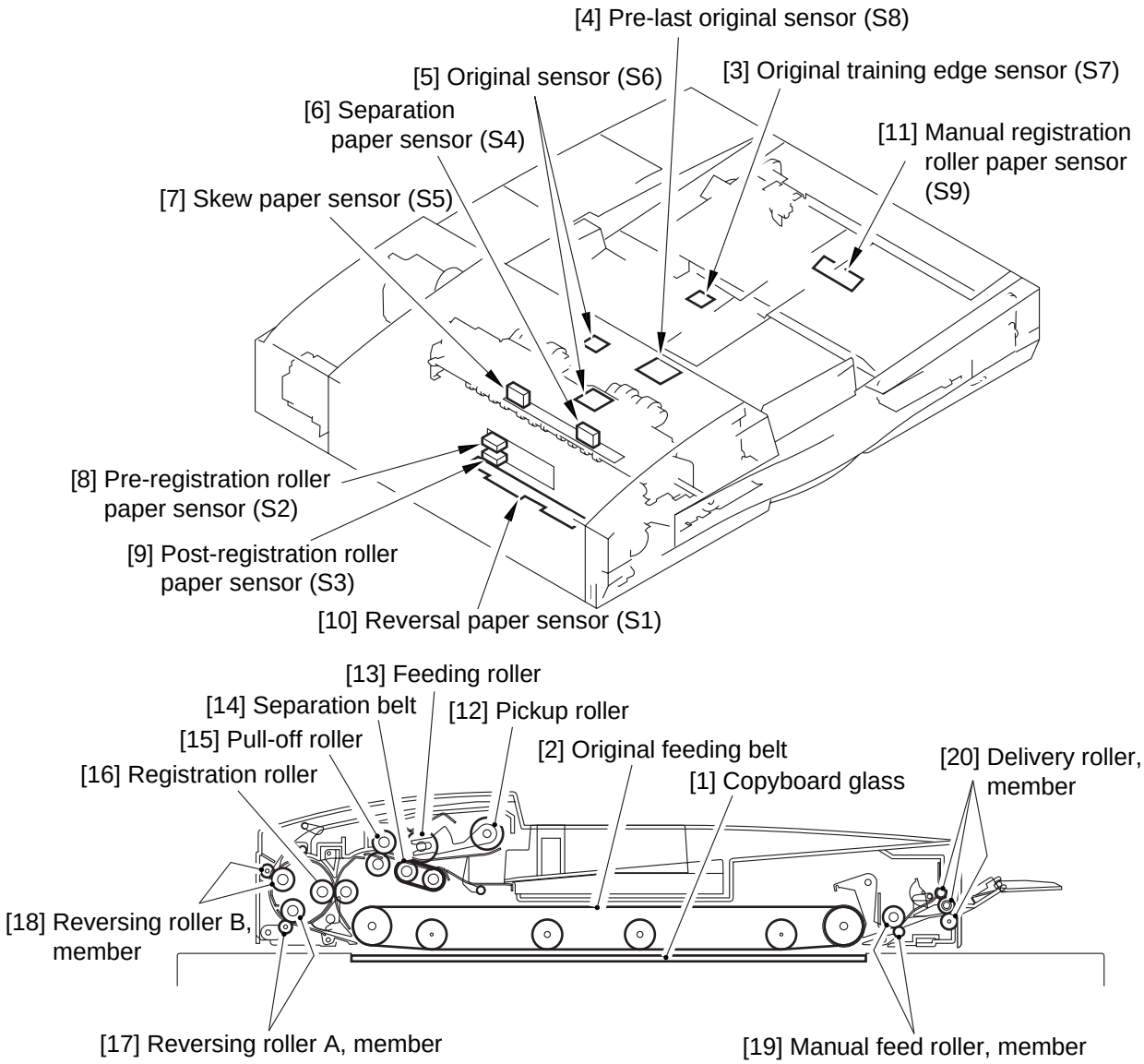
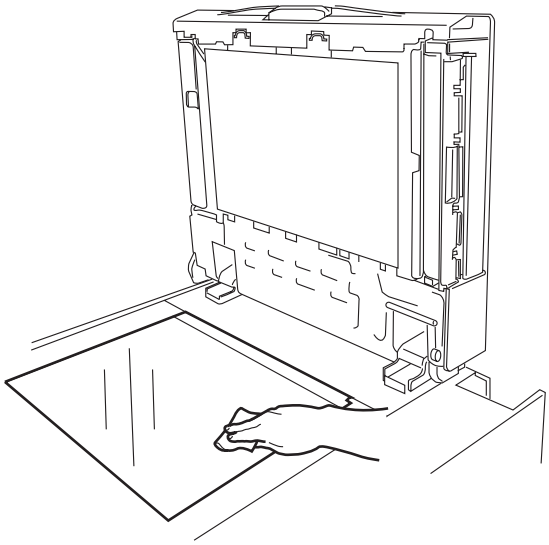

[4] Pre-last original sensor (S8)
[5] Original sensor (S6)
[3] Original training edge sensor (S7)
[6] Separation paper sensor (S4)
[11] Manual registration roller paper sensor (S9)
[7] Skew paper sensor (S5)
[8] Pre-registration roller paper sensor (S2)
[9] Post-registration roller paper sensor (S3)
[10] Reversal paper sensor (S1)
[13] Feeding roller
[14] Separation belt
[12] Pickup roller
[15] Pull-off roller
[2] Original feeding belt
[20] Delivery roller, member
[16] Registration roller
[1] Copyboard glass
[18] Reversing roller B, member
[17] Reversing roller A, member
[19] Manual feed roller, member

F04-301-01

4 Cleaning

4.1 Copyboard Glass

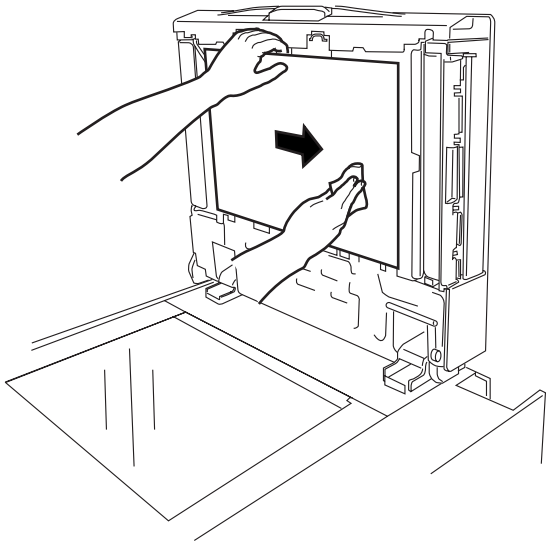
1) Wipe the copyboard glass of the copier with a cloth moistened with alcohol.



F04-401-01

4.2 Belt Assembly

1) Dry wipe the original feeding belt while moving it in the direction of the arrow. If the dirt is excessive, wipe it with a cloth moistened with a solution of mild detergent; then, dry wipe it.



F04-401-02

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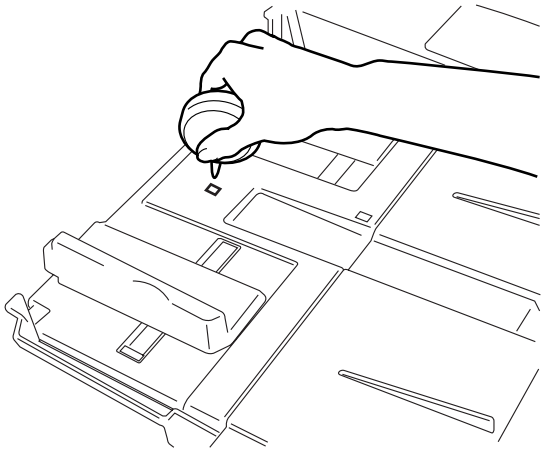
4.3 Sensors

4.3.1 Pre-Last Original Paper Sensor

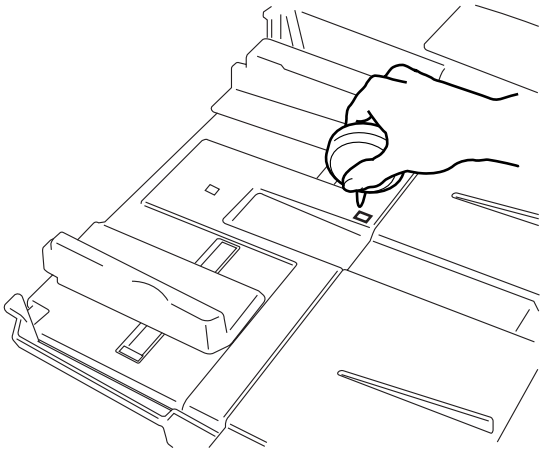
1) Clean the sensor window in the original tray using a blower brush.



F04-401-03

4.3.2 Original Trailing Edge Sensor

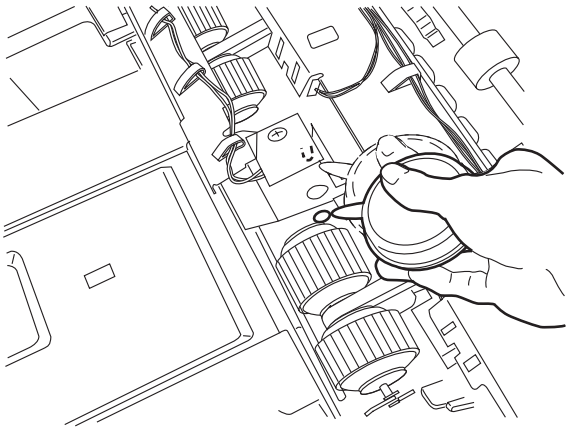
1) Clean the sensor widow in the original tray using a blower brush.



F04-401-04

4.3.3 Original Sensor

1) Remove the pickup assembly cover. (F03-301-08a,08b)
2) Clean the light-receiving area of the sensor stay and the light-emitting area at the rear of the guide plate using a blower brush.



F04-401-05

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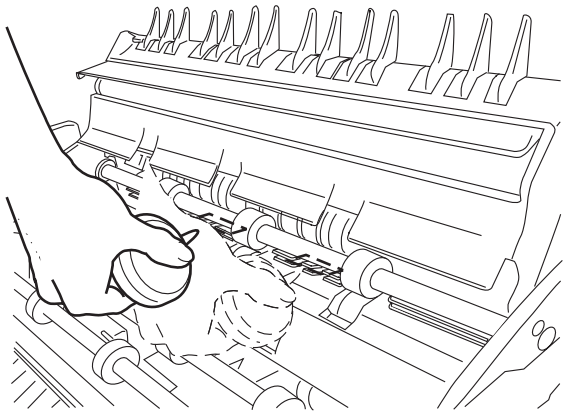
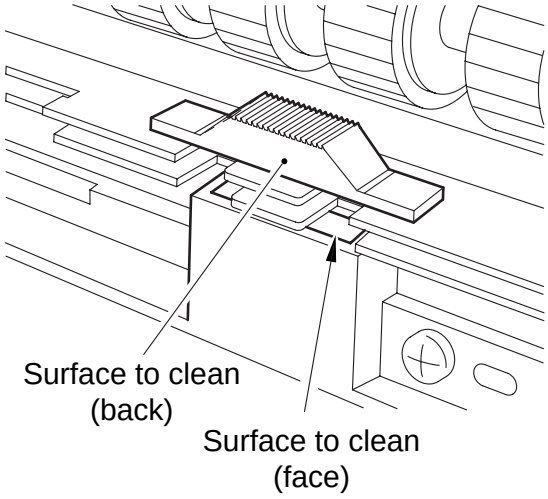
4.3.4 Separation Paper/Skew Paper Sensor

Do not use a solvent (alcohol-family or ketone family) to clean the prism face. It is made of acrylic resin, and contact with solvent can discolor it, adversely affecting its operation.



F04-401-06a

1) Open the pickup assembly upper cover.
2) Open the registration guide, and put the blower brush between the separation stay and the separation guide to clean. (The one to the front is the separation paper sensor, while the one at the rear is the skew paper sensor.)

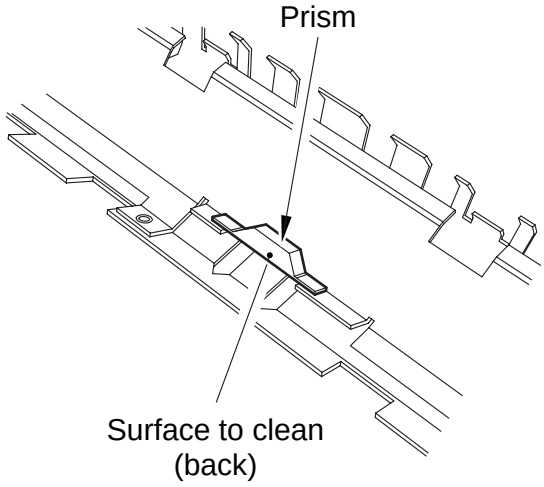


F04-401-06b

4.3.5 Pre-Registration Roller Paper Sensor

Do not use a solvent (alcohol-family or ketone-family) to clean the prism face. It is made of acrylic resin, and contact with solvent can discolor it, adversely affecting its operation.

1) Remove the reversing guide. (F03-301-28)
2) Clean the face of the prism behind the reversing guide.



F04-401-07a

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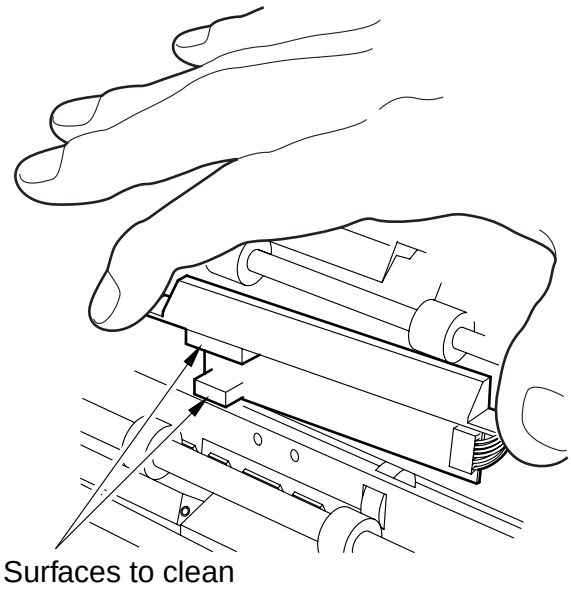
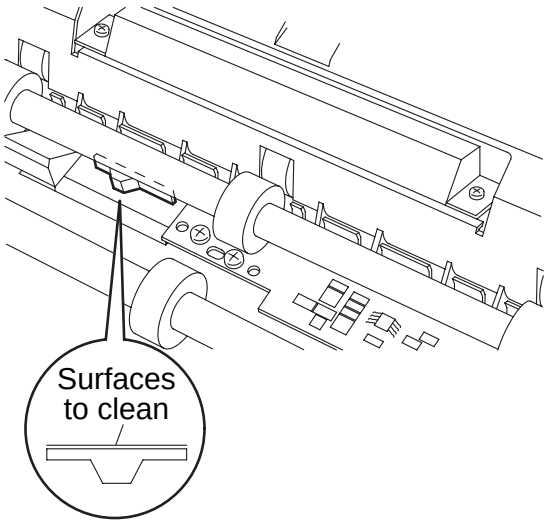
3) Remove the registration sensor PCB. (F03-301-29)
4) Clean the two filter surfaces of the sensor.



F04-401-07b

4.3.6 Post-Registration Roller Paper Sensor

Do not use a solvent (alcohol-family or ketone-family) to clean the prism face. It is made of acrylic resin, and contact with solvent can discolor it, adversely affecting its operation.

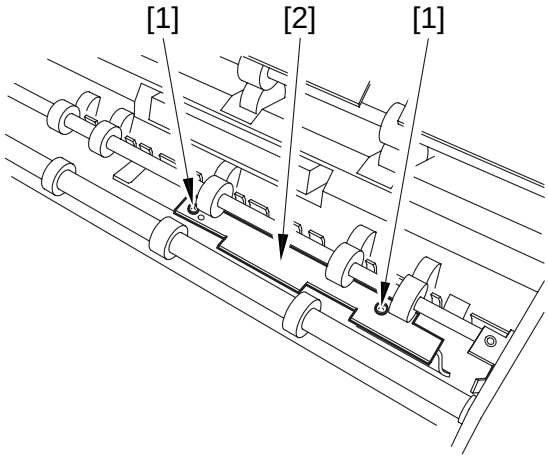


F04-401-08

1) Open the pickup upper cover.
2) Remove the reversing guide. (F03-301-28)
3) Clear the surface of the prism of the post-registration roller paper sensor.

4.3.7 Reversal Paper Sensor

1) Remove the reversing guide. (F03-301-28)
2) Remove the two screws [1], and detach the reversal sensor [2].



F04-401-09a

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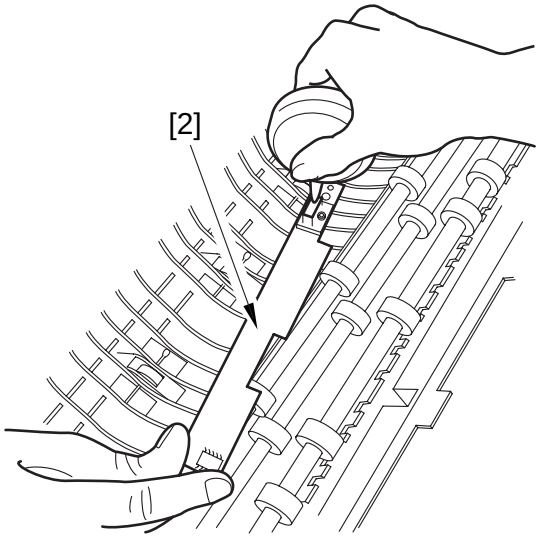
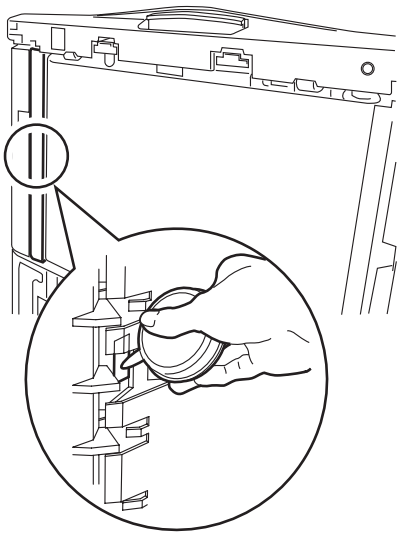
3) lean the filter face of the reversal sensor [2] using a blower brush.



F04-401-09b

4) Open the DADF fully. (F03-101-03)
5) While opening the pickup middle guide found to the left of the feeding belt, aim a blower brush against the prism of the reflecting face of the reversal sensor in view in the rear to clean.



F04-401-09c

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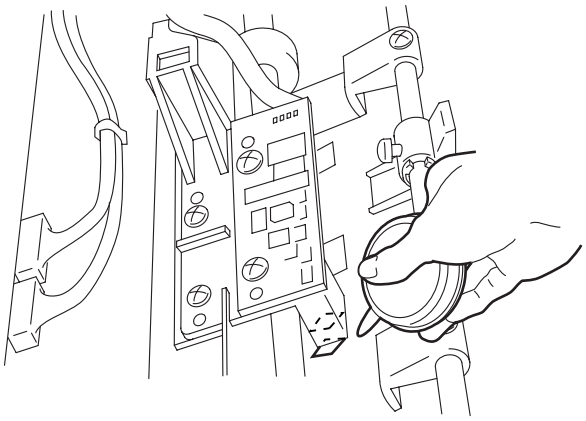
4.3.8 Manual Feed Registration Roller Paper Sensor

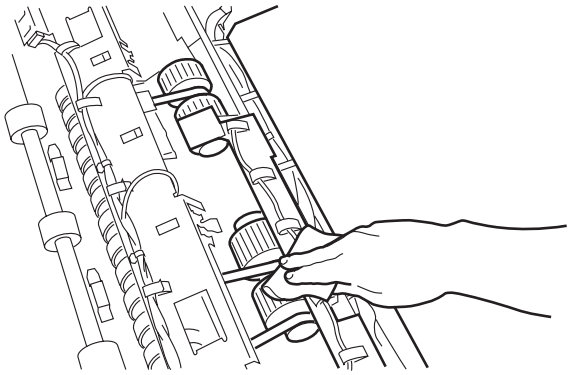
1) Remove the body front cover.
2) Remove the main cover.
3) Aim a blower brush against the detecting hole of the registration sensor on the delivery upper guide to clean.



F04-401-10

4.3.9 Pickup Roller

1) Open the pickup assembly upper cover.
2) Remove the pickup cover.
3) Clean the surface of the roller using lint-free paper or cloth moistened with alcohol.



F04-401-11

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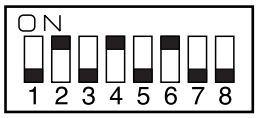
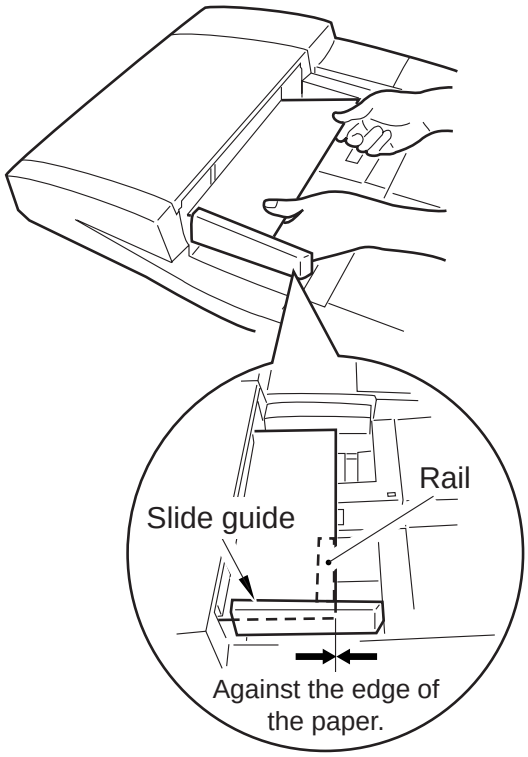
4.3.10 Separation Belt/Feeding Roller

1) Obtain a single sheet of A4 or LTR copy paper.
2) Remove the ADF controller cover, and set the DIP switch (SW1) on the ADF controller PCB as indicated.
3) Press the push switch (SW2) on the ADF controller PCB.
   • The separation assembly will start.
4) Moisten t the copy paper obtained in step 1) with alcohol.
5) Keep the copy paper against the pickup slot to clean.

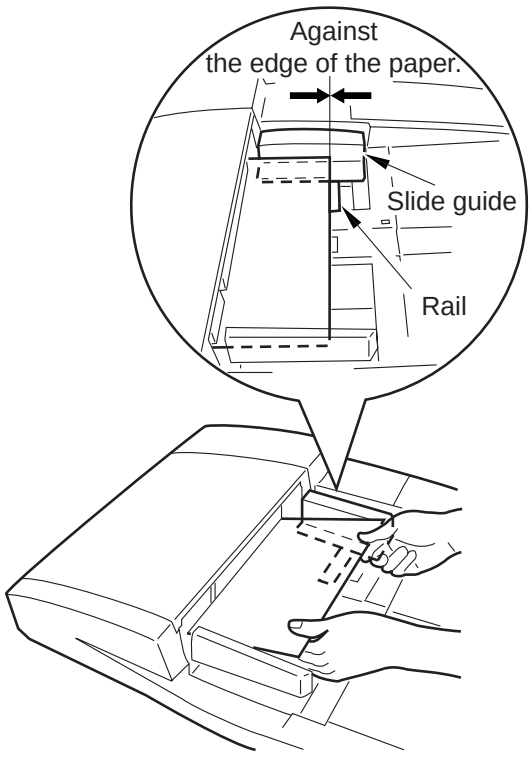
The pull-off roller is also driven. Hold the copy paper so that it will not be drawn to the pull-off roller: in the case of A4, as shown in F04-401-13a; in the case of LTR, as shown in F04-401-13b.



F04-401-12



F04-401-13a



F04-401-13b

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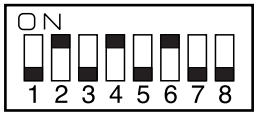
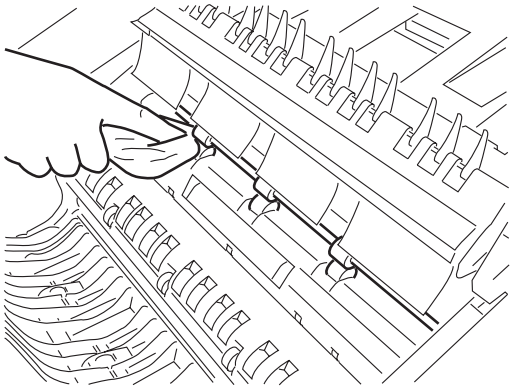
6) At the end of cleaning work, press the push switch (SW2) once again.
   • The separation assembly will stop.

4.3.11 Pull-Off Roller

1) Open the upper cover, and open the feeding guide.
2) Remove the ADF controller cover, and set the DIP switch (SW1) on the ADF controller PCB as indicated.
3) Press the push switch (SW2) on the ADF controller PCB.
   • The separation assembly will start.
4) Clean it with lint-free paper moistened with alcohol.



F04-401-14

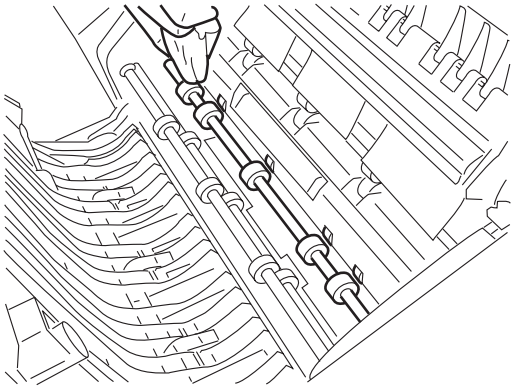


F04-401-15

4.3.12 Registration Roller

1) Open the upper cover, and open the feeding guide.
2) Remove the reversing guide.
3) Remove the ADF controller cover, and set the DIP switch (SW1) on the ADF controller PCB as indicated.
4) Press the push switch (SW2) on the ADF controller PCB.
   • The reversing assembly will start.
5) Clean it with lint-free paper moistened with alcohol.

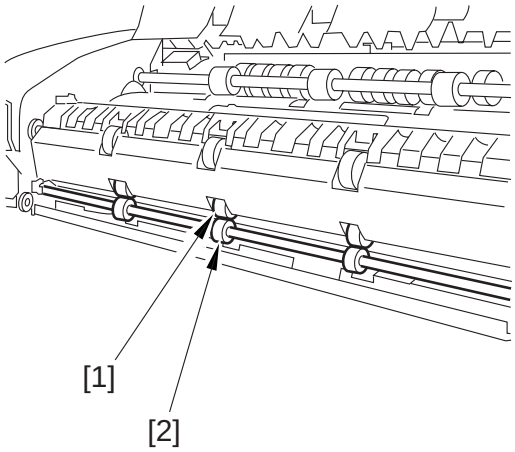
F04-401-16



F04-401-17

4.3.13 Reversing Roller A, Support Member

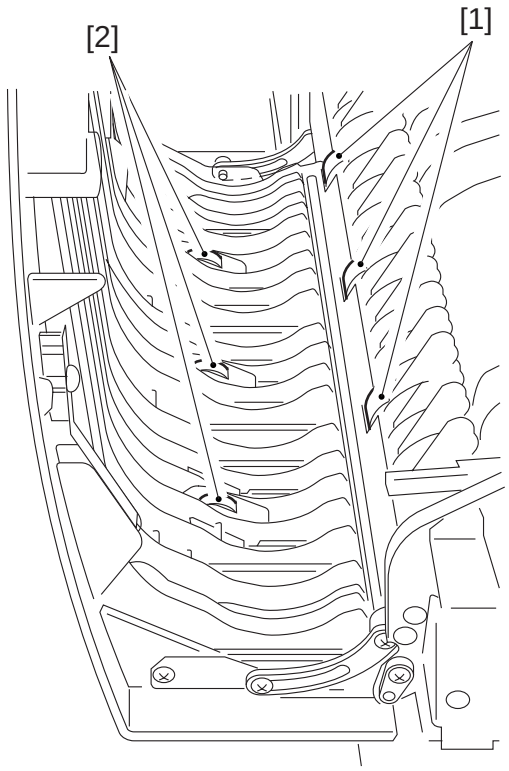
1) Open the pickup assembly upper cover.
2) Clean the reversing roller A [1] and the support member [2] with lint-free paper or a cloth moistened with alcohol.



F04-401-18

4.3.14 Reversing Roller B, Support Member

1) Open the pickup assembly upper cover.
2) Clean the reversing roller B [1] and the support member [2] with lint-free paper or a cloth moistened with alcohol.



F04-401-19

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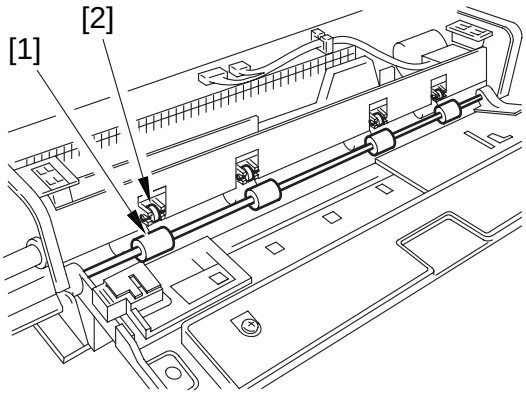
4.3.15 Manual Feed Roller, Support Member

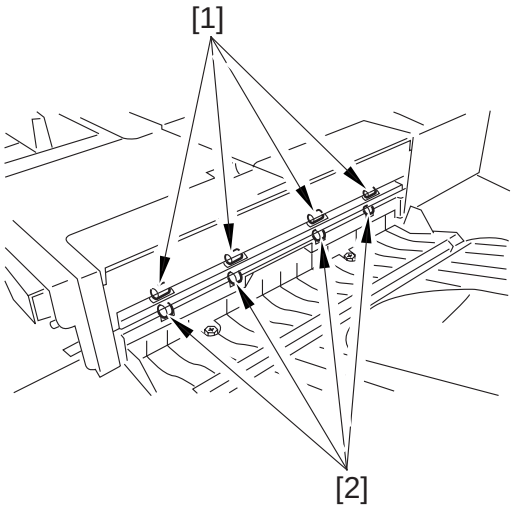
1) Open the manual feed tray.
2) Clean the manual feed (delivery) roller [1] and the support member [2] with lint-free paper or a cloth moistened with alcohol.



F04-401-20

4.3.16 Delivery Roller, Support Member

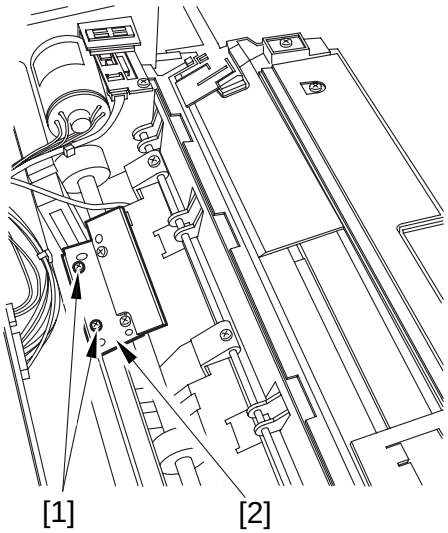
1) With the manual feed tray closed, clean the delivery (manual feed) roller [1] and the support member [2] with lint-free paper or a cloth moistened with alcohol.



F04-401-21

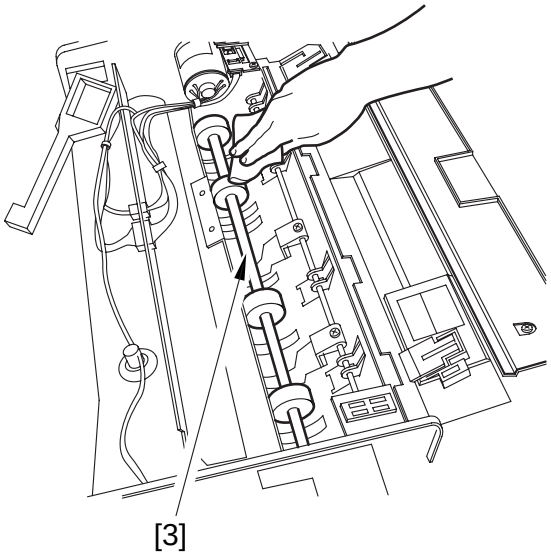
4.3.17 Manual Feed Registration Roller, Support Member

1) Remove the main cover.
2) Remove the two screws [1], and the detach the manual feed registration sensor PCB [2].



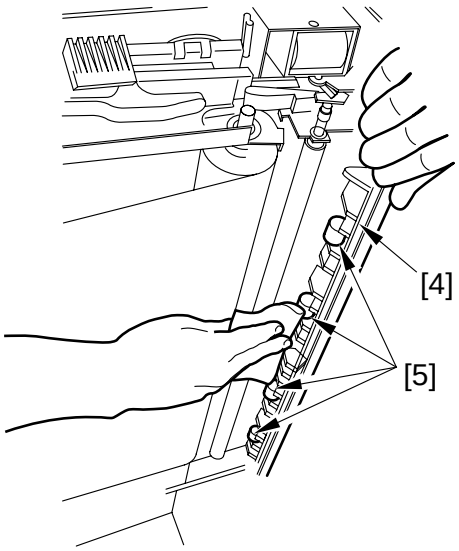
F04-401-22

3) Clean the manual feed registration roller [3] with lint-free paper or a cloth mounted with alcohol.



F04-401-23a

4) Shift up the DADF, and open the delivery lower guide [4]; then, clean the manual feed registration roller member [5] with lint-free paper or a cloth moistened with alcohol.



F04-410-23b

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CHAPTER 5

TROUBLESHOOTING

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1 Standards and Adjustments

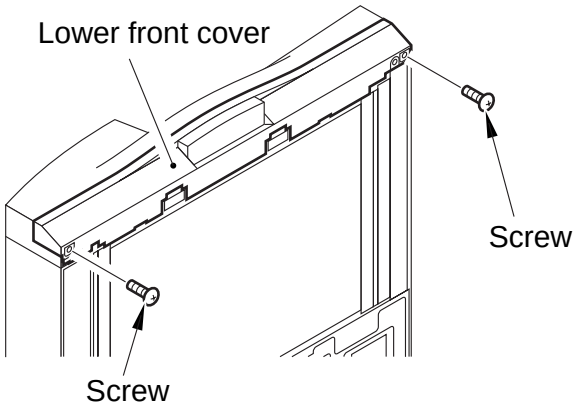
1.1 Basic Adjustments

The basic adjustments of the DADF consist of the following, which must be performed in sequence:

[1] ADF height adjustment
[2] ADF right angel adjustment
[3] Skew correction
[4] Horizontal adjustment
[5] Original stop position adjustment

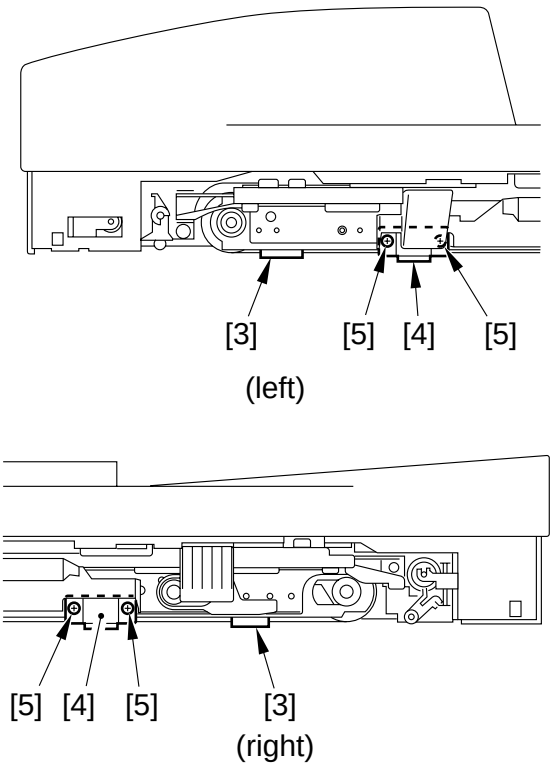
1.1.1 ADF Height Adjustment

1) Remove the two screws, and detach the lower front cover.



F05-101-01

2) Make adjustments by loosening the two fixed screws [5] on the magnet catch so that the left and right rubber feet are in contact with the base when the DADF is closed.
3) After the adjustment, tighten the fixing screws on the magnet catch, and mount the front cover.



F05-101-02

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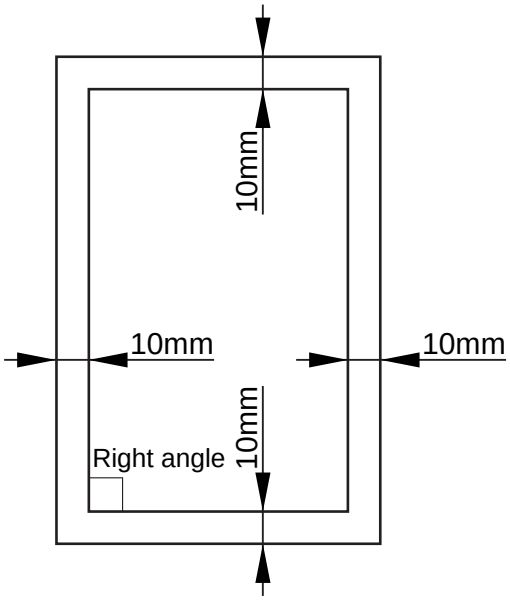
1.1.2 ADF Right Angle Adjustment

This adjustment is to adjust the right angle made by the copier's scanner and the DADF's original feed path.

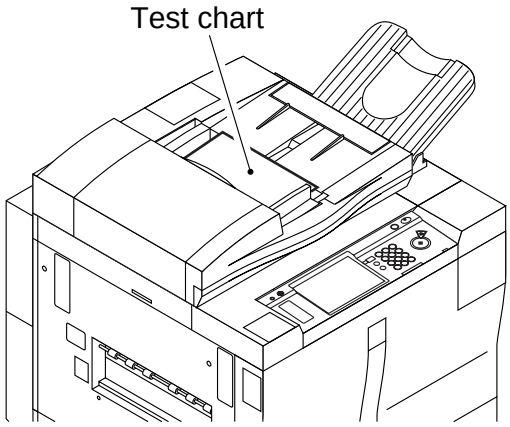
1) Using an A4 or LTR sheet of copy paper, prepare a test chart as shown.



F05-101-03

2) Place the test chart in the original tray, and make a Direct copy in stream reading mode.

Be sure to use stream reading mode.



F05-101-04

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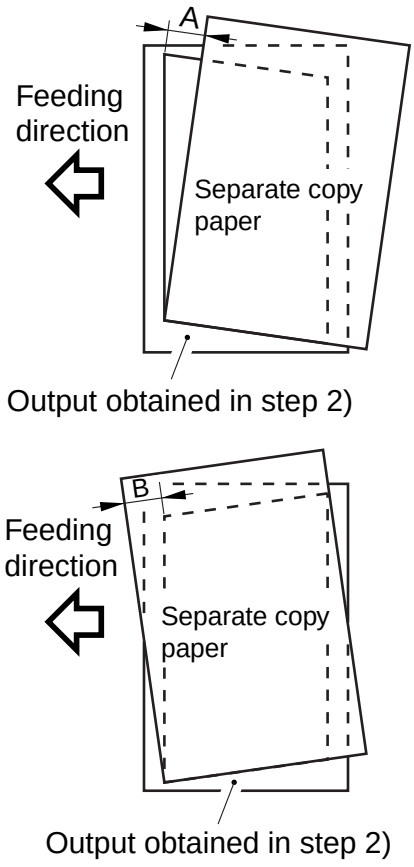
3) Place a separate sheet of copy paper over the output obtained in step 2) to check the right angel.
A<1 mm
B<1 mm

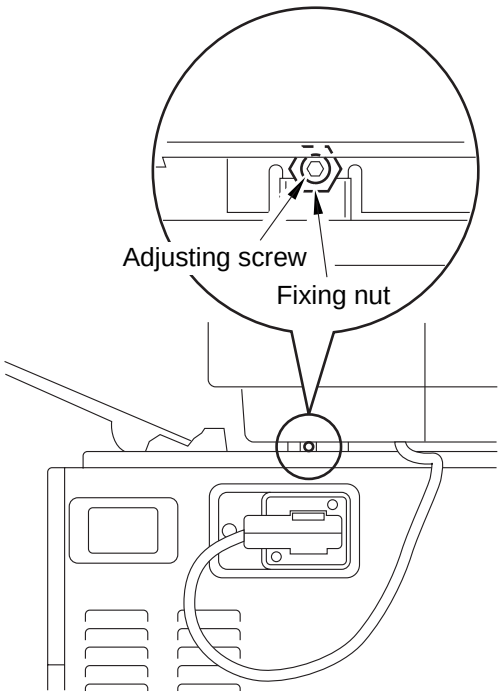


F05-101-05

4) If the value is not as indicated, loosen the fixing nut found at the rear of the right hinge unit; then, make adjustments by turning the adjusting screws.

When turning the adjusting screw, be sure to keep the DADF open.

5) Tighten the fixing nut to secure the adjusting screw.



If A>0, turn the adjusting screw counterclockwise.
If B>0, turn the adjusting screw clockwise.

F05-101-06

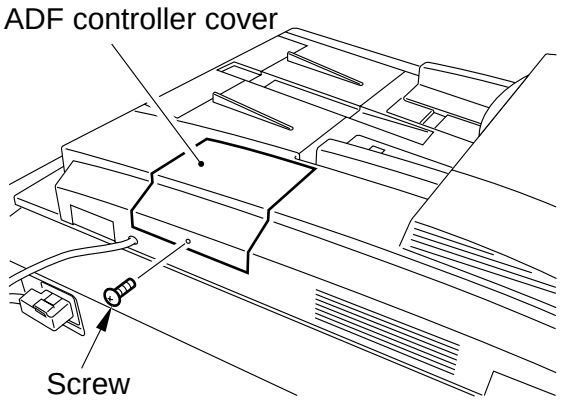
1.1.3 Correcting the Skew

The skew must be removed for the following three:

[1] Pickup from the original tray
[2] Pickup from the manual feed tray
[3] Reversal for double-sided originals

a. Pickup from the Original Tray

1) Remove the screw, and detach the ADF controller cover.

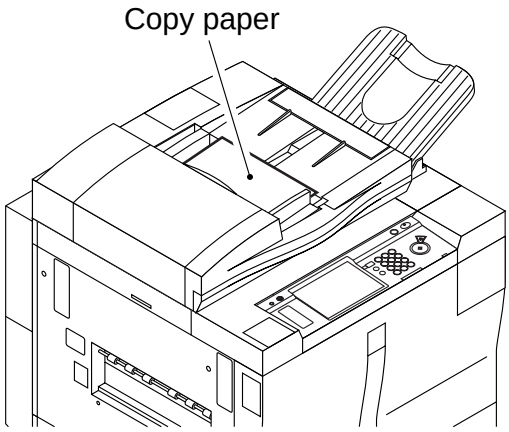


F05-101-07

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

F05-101-08

3) Place a single sheet of A4 or LTR copy paper in the original tray.



F05-101-09

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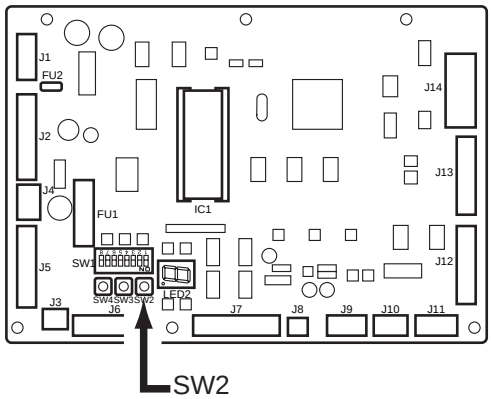
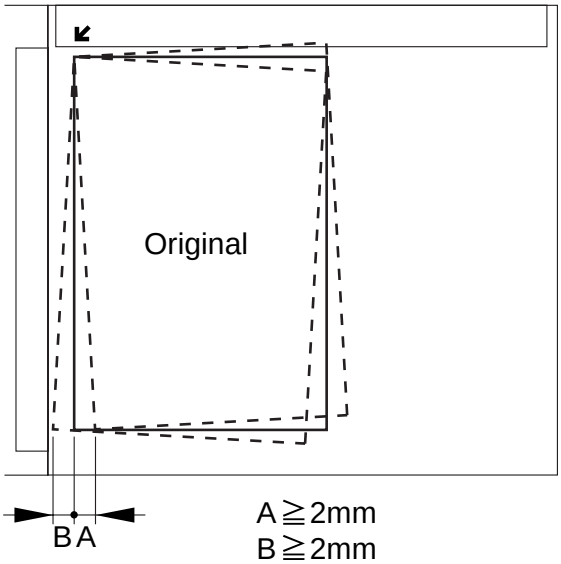
4) Press the push switch (SW2) on the ADF controller PCB once.
   • The original will be picked up and stopped on the copyboard glass.



F05-101-10

5) Open the DADF slowly, and check to make sure that A and B indicated in the figure are 2 mm or less.
   Close the DADF, and press the push switch (SW2) on the ADF controller PCB once.
   • The original will be delivered to the delivery tray.

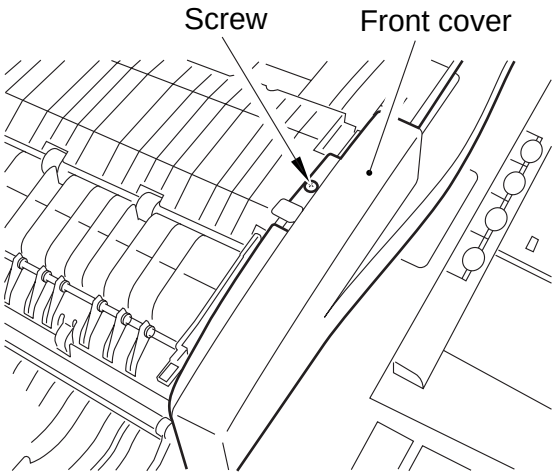


F05-101-11

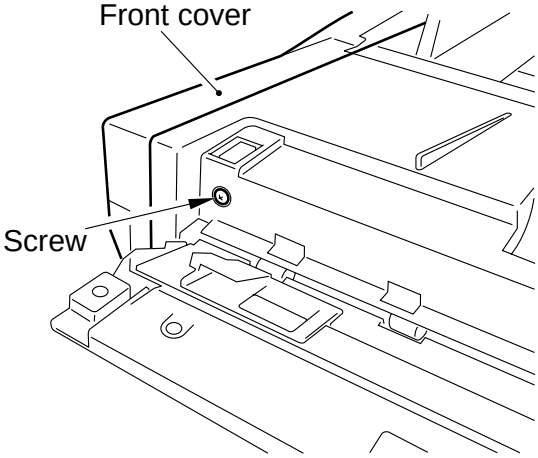
If the Value Is Not As Indicated

Adjust the position of the registration roller.

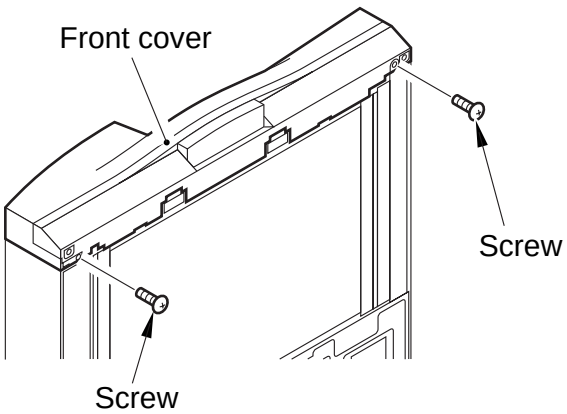
1) Remove the four screws, and detach the front cover.



F05-101-12a



F05-101-12b



F05-101-12c

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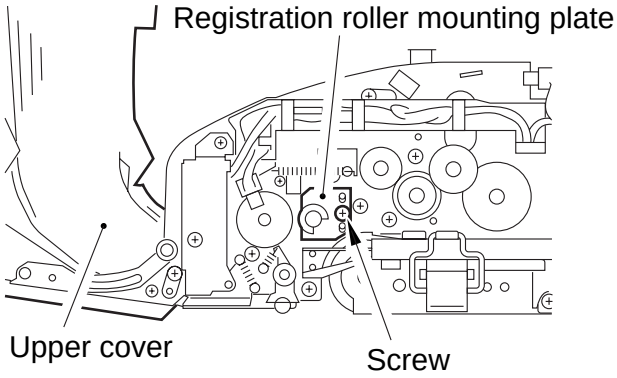
2) Open the upper cover, and loosen the fixing screw on the registration roller mounting plate; then, slide it up/down to adjust the mounting angle of the registration roller.



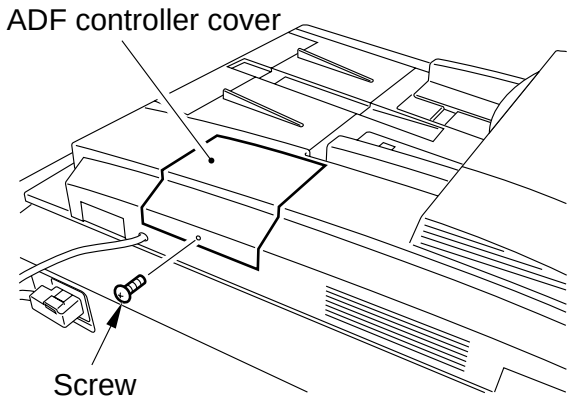
If A>0, slide the mounting plate down.
If B>0, slide the mounting plate up.

F05-101-13

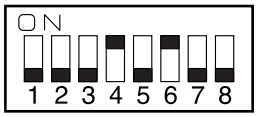
3) At the end of adjustment, tighten the fixing screw of the registration roller mounting plate.
4) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.

b. Pickup from the Manual Feed Tray

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as follows.

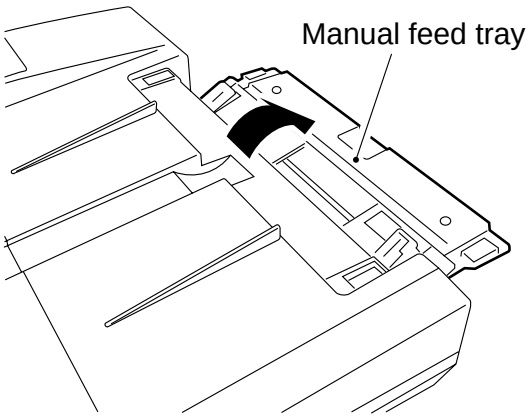


F05-101-14

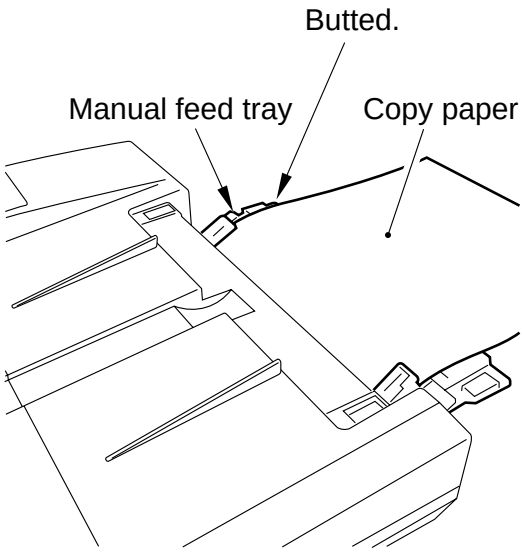


F05-101-15

3) Open the manual feed tray, and place a single sheet of A4 or LTR copy paper.
   • Be sure to butt the copy paper against the rear.

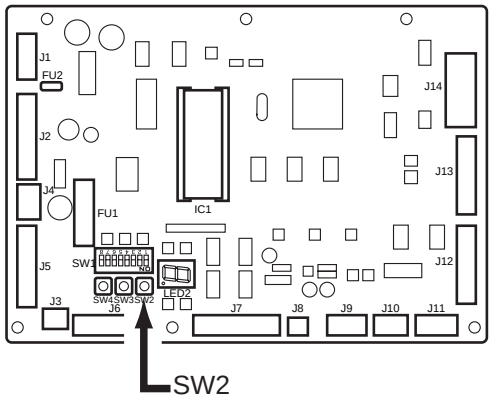


F05-101-16



F05-101-17

4) Press the push switch (SW2) on the ADF controller PCB once.
   • The original will be picked up and stopped on the copyboard glass.



F05-101-18

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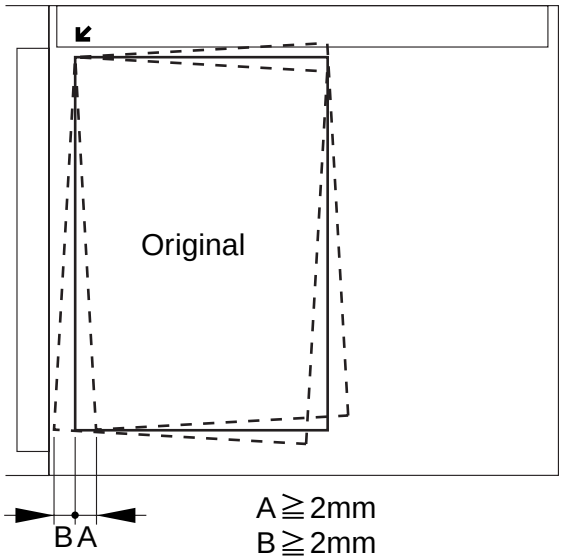
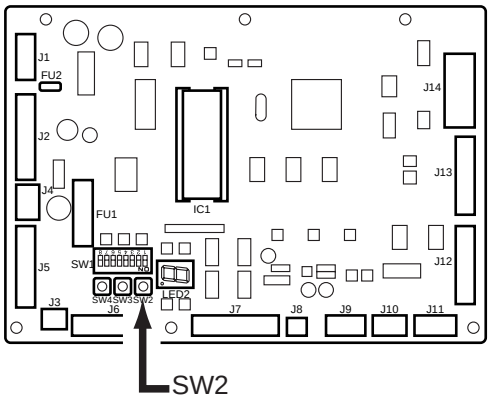
5) Open the DADF slowly, and check to make sure that A and B indicated in the Figure is 2 mm or less.
Close the DADF, and press the push switch (SW2) on the ADF controller once.
• The original will be delivered to the delivery tray.



F05-101-19a

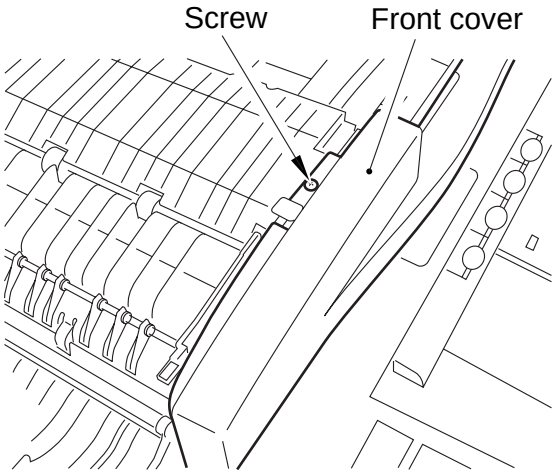


F05-101-19b

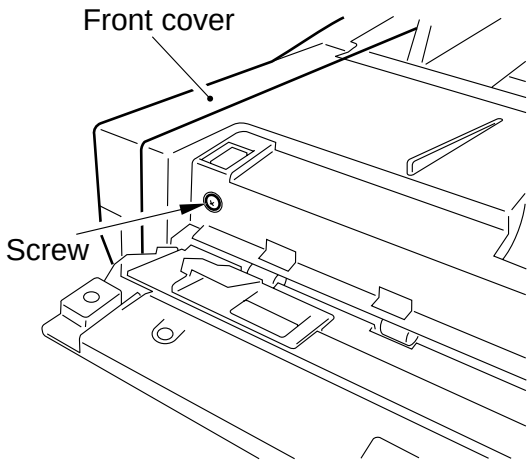
If the Value Is Not As Indicated

Adjust the position of the manual feed registration roller.

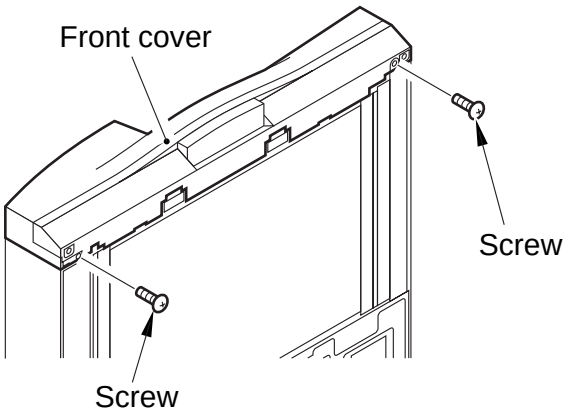
1) Remove the four screws, and detach the front cover.



F05-101-20a



F05-101-20b



F05-101-20c

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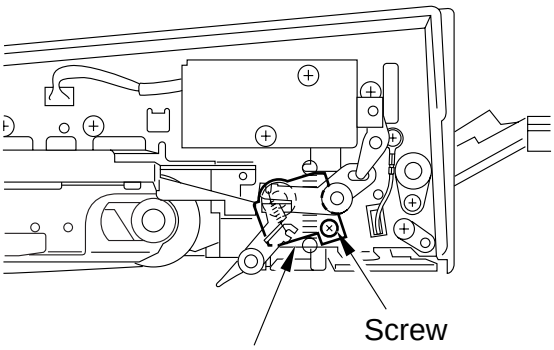
2) Loosen the fixing screw on the manual feed registration roller mounting plate, and slide it to the left and the right to adjust the position of the registration roller.
3) At the end of the adjustment, tighten the fixing screw on the manual feed registration roller mounting plate.
4) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.

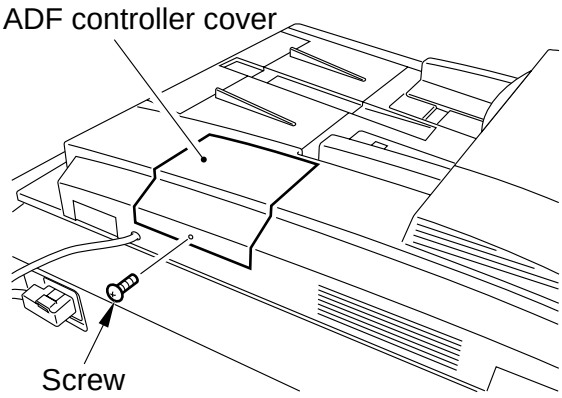


If A>0, slide the mounting plate to the right.
If B>0, slide the mounting plate to the left.

F05-101-21

c. Reversal for Double-Sided Originals

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



F05-101-22

F05-101-23

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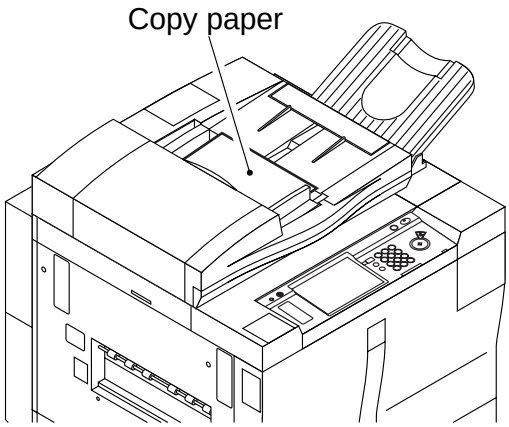
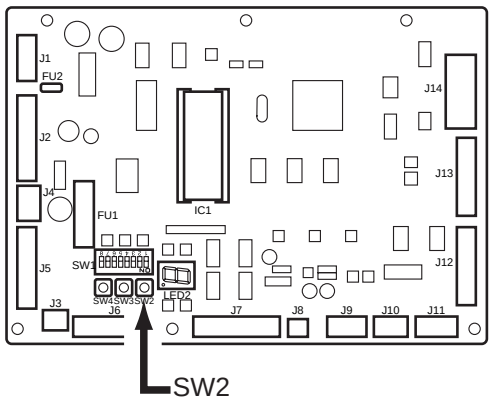
3) Place a single sheet of A4 or LTR copy paper in the original tray.



F05-101-24

4) Press the push switch (SW2) on the ADF controller PCB twice.
   • A single press on the push switch (SW2) causes the original to be picked up and stopped on the copyboard glass. (CW rotation)
   Another press will reverse the original and stop it on the copyboard glass.



F05-101-25

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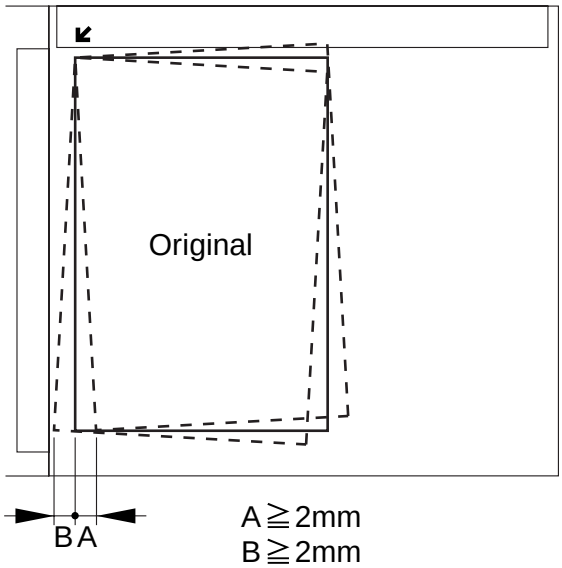
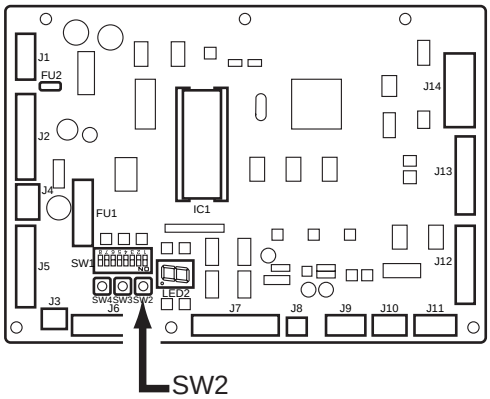
5) Open the DADF slowly, and check to make sure that A and B indicated in the figure are 2 mm or less.
Close the DADF, and press the push switch (SW2) on the ADF controller PCB once.
• The original will be delivered to the delivery tray.



F05-101-26

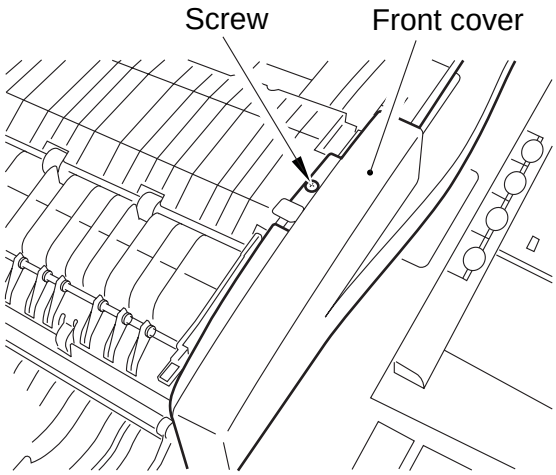


F05-101-27

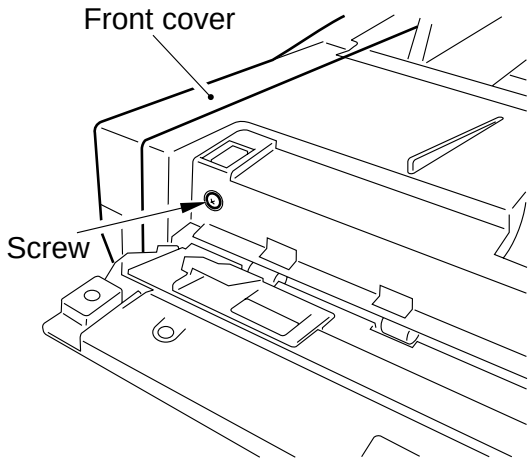
If the Value Is Not As Indicated

If the value is not as indicated, adjust the position of the registration roller.

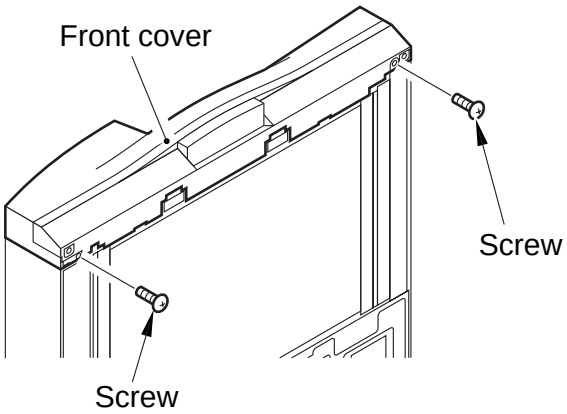
1) Remove the four screws, and detach the front cover.



F05-101-28a



F05-101-28b



F05-101-28c

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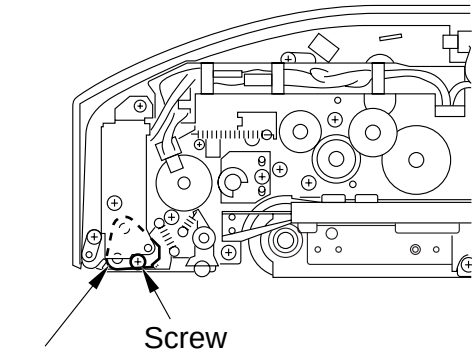
2) Loosen the fixing screw on the reversal registration roller mounting plate, and slide it to the left and the right to adjust the mounting angle of the registration roller.
3) At the end of adjustment, tighten the fixing screw on the reversal registration roller mounting plate.
4) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.



If A>0, slide the mounting plate to the left.
If B>0, slide the mounting plate to the right.

F05-101-29

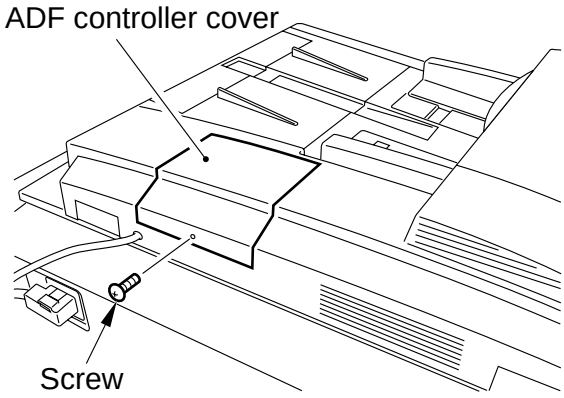
1.1.4 Horizontal Registration Adjustment

Horizontal registration adjustment is made for the following two:

[1] Pickup from the original tray
[2] Pick up from the manual feed tray

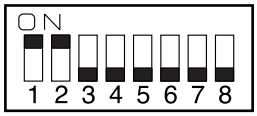
a. Pickup from the Original Tray

1) Remove the screw, and detach the ADF controller cover.



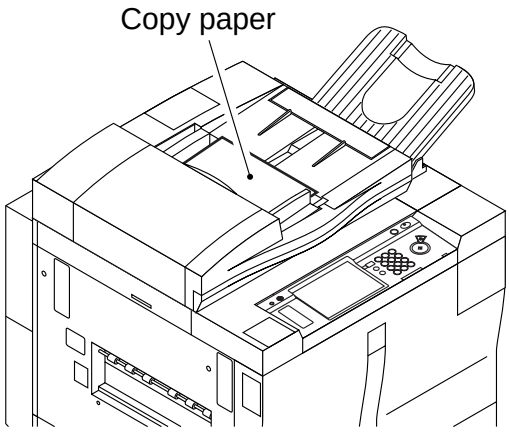
F05-101-30

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



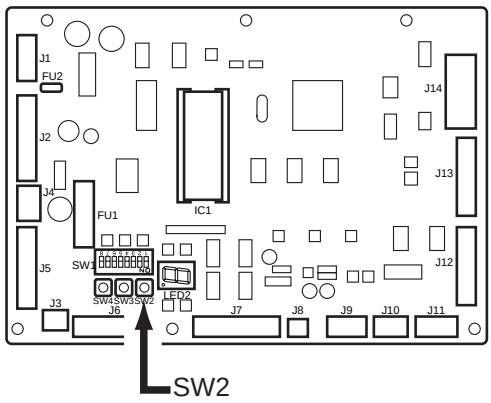
F05-101-31

3) Place a single sheet of A4 or LTR copy paper in the original tray.



F05-101-32

4) Press the push switch (SW2) on the ADF controller PCB once.
   • A single press on the push switch (SW2) causes the original to be picked up and stopped on the copyboard glass.

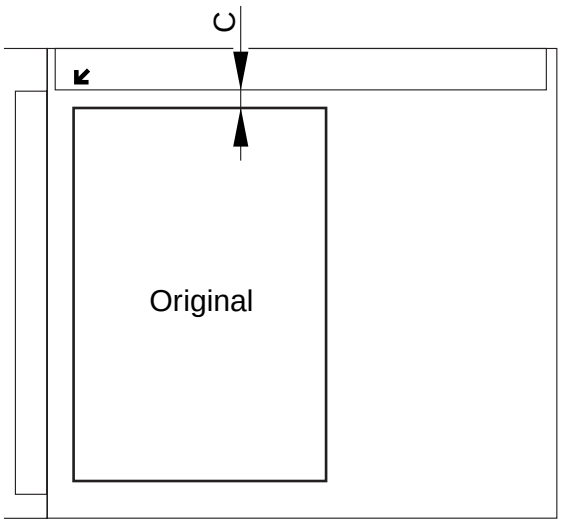


F05-101-33

5) Open the ADF slowly, and check to make sure that C shown in the figure is as indicated.

Original size	Value of C
A4	3.1±1mm
LTR	11.9±1mm

T05-101-01



F05-101-34

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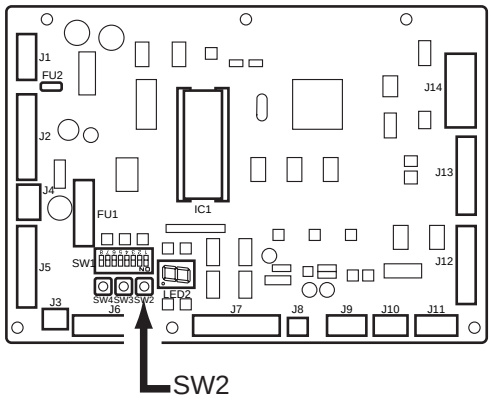
6) Close the DADF, and press the push switch (SW2) on the ADF controller PCB once.
   • The original will be delivered to the delivery tray.

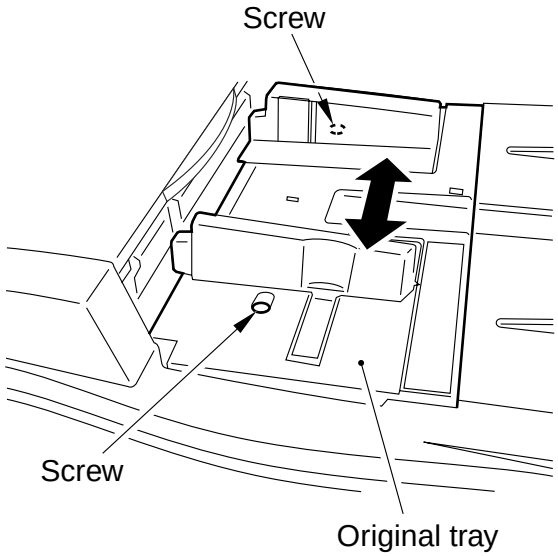


F05-101-35

If the Value Is Not As Indicated

If the value is not as indicated, adjust the position of the original tray.

1) Loosen the tray fixing screw, and adjust the position of the original tray.



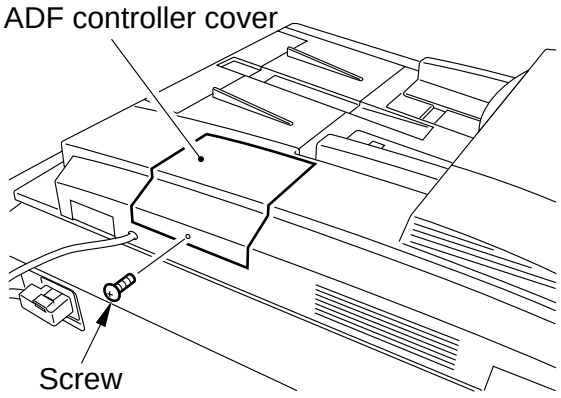
If C>2.4 mm, shift the original tray toward the rear.
If C<2.4 mm, shift the original tray toward the front.

F05-101-36

2) At the end of the adjustment, loosen the original tray fixing screw.
3) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.

b. Manual Feed Tray Pickup

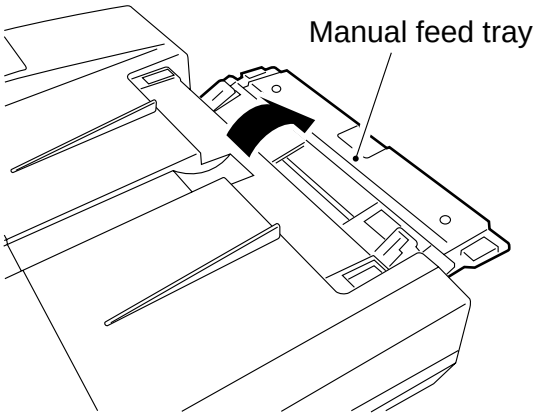
1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



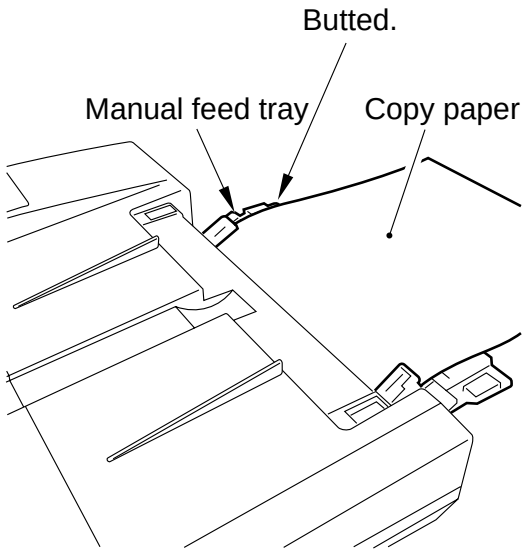
F05-101-37

F05-101-38

3) Open the manual feed tray, and place a single sheet of A4 or LTR copy paper.
   • Be sure to butt the copy paper against the rear.



F05-101-39



F05-101-40

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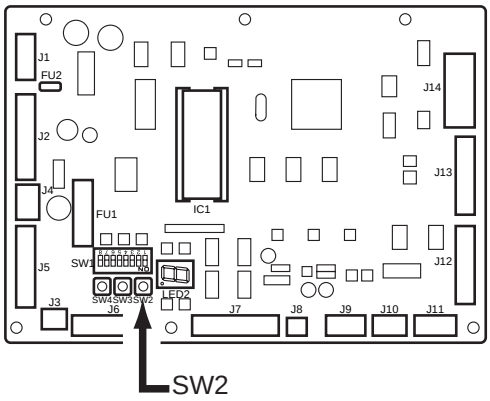
4) Press the push switch (SW2) on the ADF controller PCB once.
   • A single press on the push switch (SW2) causes the original to be picked up and sopped on the copyboard glass.



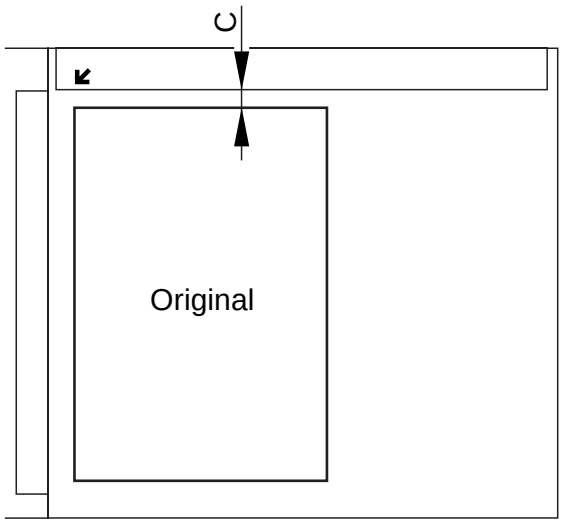
F05-101-41

5) Open the DADF slowly, and check to make sure that C shown is as indicated.

Original size	Value of C
A4	3.1±1mm
LTR	11.9±1mm

T05-101-02

Close the DADF, and press the push switch (SW2) on the ADF controller PCB once.
   • The original will be delivered to the delivery tray.

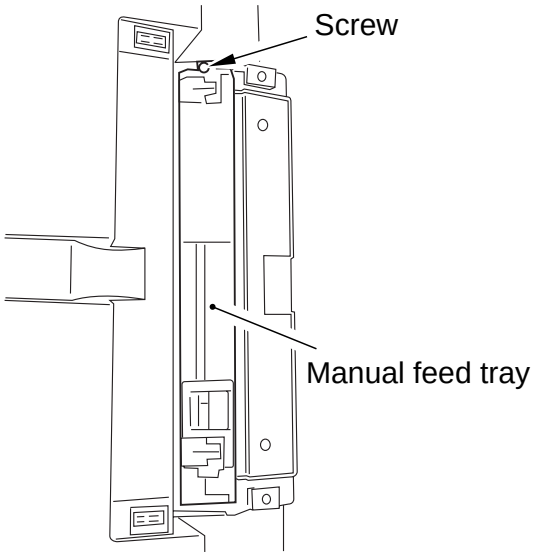


F05-101-42

If the Value Is Not As Indicated

If the value is not as indicated, adjust the position of the manual feed tray.

1) Loosen the manual feed tray fixing screw, and adjust the position of the manual feed tray.
2) At the end of adjustment, tighten the manual feed tray fixing screw.
3) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.



If C>3.1 mm for A4 or 11.9 mm for LTR, shift the manual feed tray toward the rear.
If C<3.1 mm for A4 or 11.9 mm for LTR, shift the manual feed tray toward the front.

F05-101-43

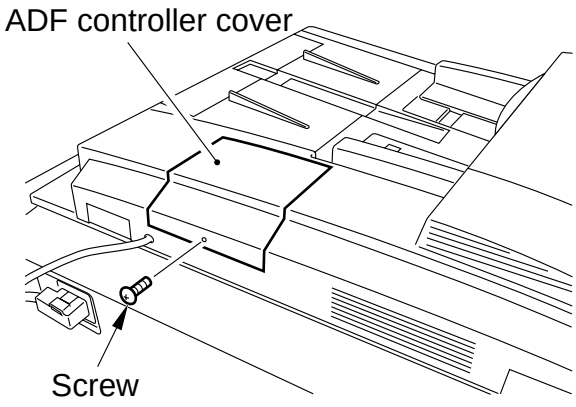
1.1.5 Original Stop Position Adjustment

Original stop position adjustment is made for the following two:

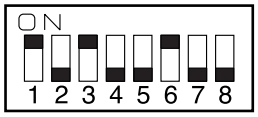
[1] Pickup from the original tray
[2] Pickup from the manual feed tray

a. Original Tray Pickup

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW10) on the ADF controller PCB as indicated.



F05-101-44



F05-101-45

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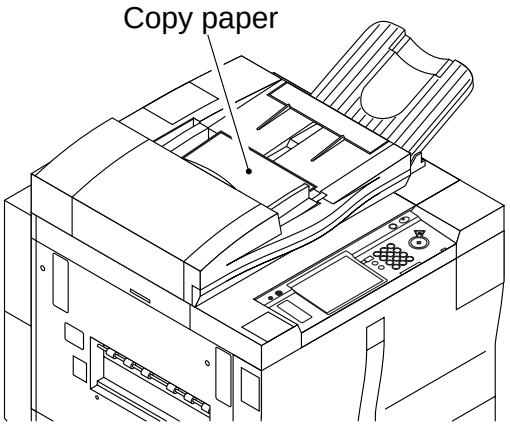
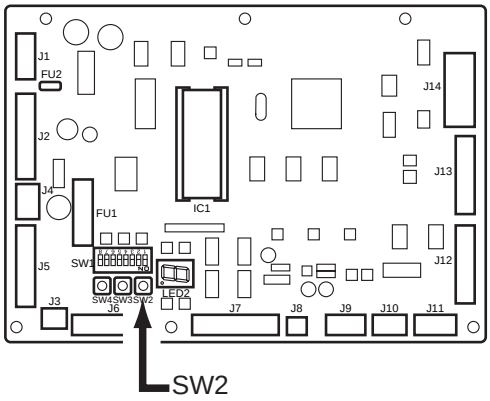
3) Place a singe sheet of A4 or LTR copy paper in the original tray.



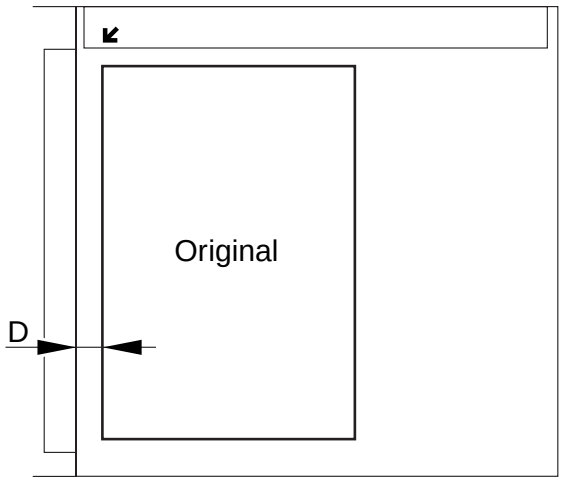
F05-101-46

4) Press the push switch (SW2) on the ADF controller PCB once.
   • A single press on the push switch (SW2) causes the original to be picked up and stopped on the copyboard glass.



F05-101-47

5) Open the DADF slowly, and check to make sure that D indicated is 11±1 mm. Then, close the DADF slowly.



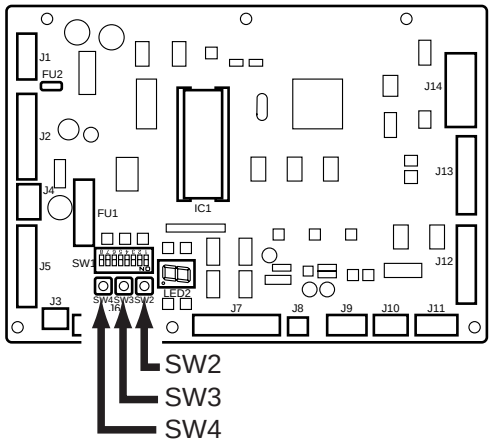
D=11±1mm

F05-101-48

6) To adjust the original stop position, use the push switches SW3 and SW4 on the ADF controller PCB.
A single press on each switch will shift the original stop position by a distance of 0.5 mm. When the correct stop position is attained, press the push switch (SW2).
• The original will be delivered, and the new position will be stored in memory.

Switch	Direction of shift
SW3	Right
SW4	Left

T05-101-03



F05-101-49

Holding down on the push switch will not cause more than a single shift.

EX

If the copy paper is stopped 12 mm from the copyboard glass,

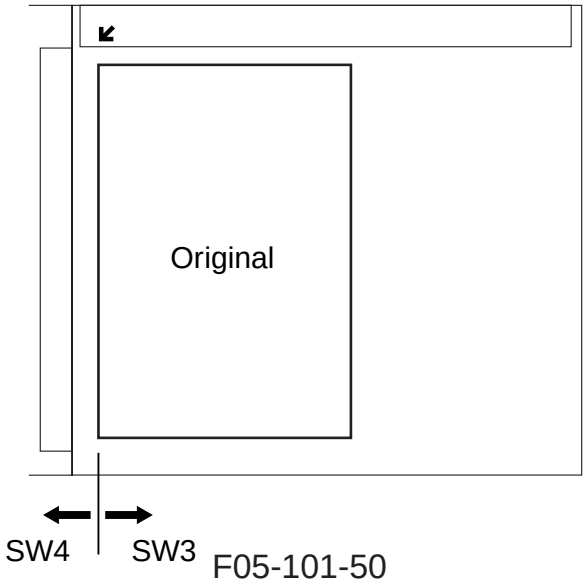
Close the DADF slowly leaving the copy paper on the copyboard glass.

To shift the stop position 1 mm to the left, the following is true:

1 ÷ 0.5 (adjustment interval) = 2

Hence, press the push switch SW4 twice, and then press the push switch SW2.

• The copy paper will be delivered, and the new setting will be stored in memory.



F05-101-50

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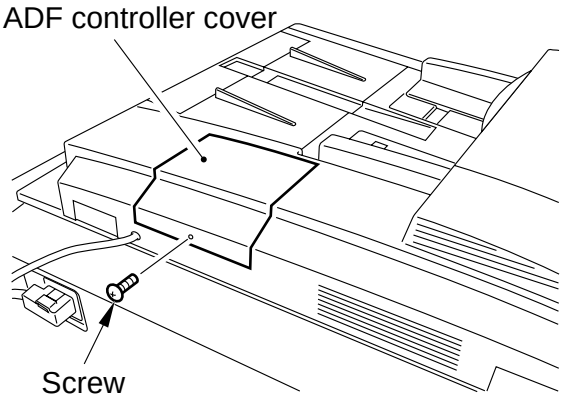
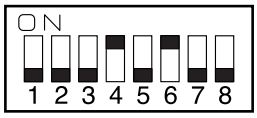
b. Pickup from the Manual Feed Tray

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

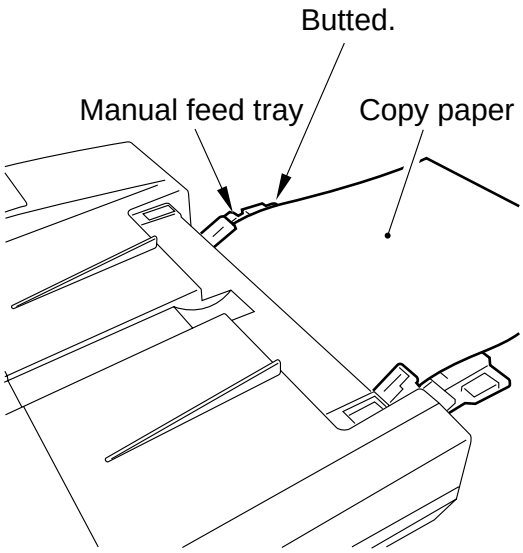


F05-101-51



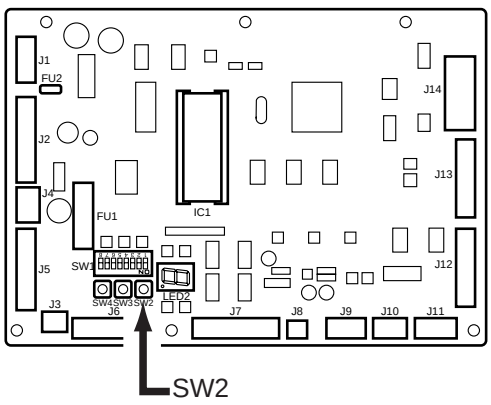
F05-101-52

3) Open the manual feed tray, and place a single sheet of A4 or LTR copy paper.
   • Be sure to butt the copy paper against the rear.



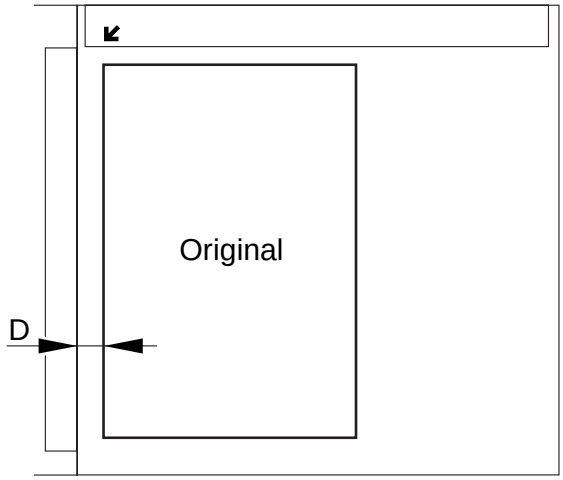
F05-101-53

4) Press the push switch (SW2) on the ADF controller PCB once.
   • A single press on the push switch (SW2) causes the original to be picked up and stopped on the copyboard glass.



F05-101-54

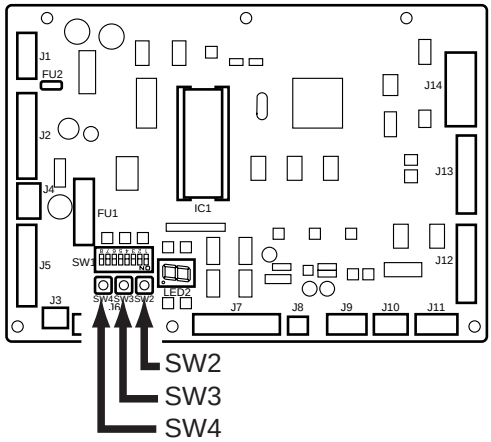
5) Open the DADF slowly, and check to make sure that D indicated is 11±1 mm. Close the DADF slowly.



D=11±1mm

F05-101-55

6) To adjust the original stop position, use the push switches SW3 and SW4 on the ADF controller PCB.
A single press on each switch will shift the original stop position by 0.5 mm.
When the correct position is attained (after switch operation), press the push switch SW2.
• The original will be delivered, and the new setting will be stored in memory.

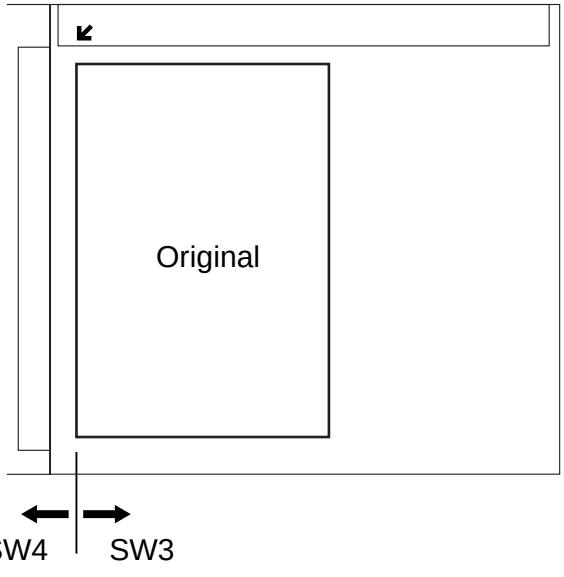


F05-101-56

Switch	Direction of shift
SW3	Right
SW4	Left

T05-101-04

Holding down the push switch will not cause more than a single shift.



F05-101-57

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EX

If the copy paper stops 12 mm from the copyboard glass,

Close the DADF slowly leaving the copy paper on the copyboard glass.

To shift the stop position 1 mm to the left, the following is true:

1 ÷ 0.5 (adjustment interval) = 2

Hence, press the push switch SW4 twice, and press the push switch SW2.

- The copy paper will be delivered, and new setting will be stored in memory.

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1.2 Making Adjustments When Replacing the Major Parts

1.2.1 Outline

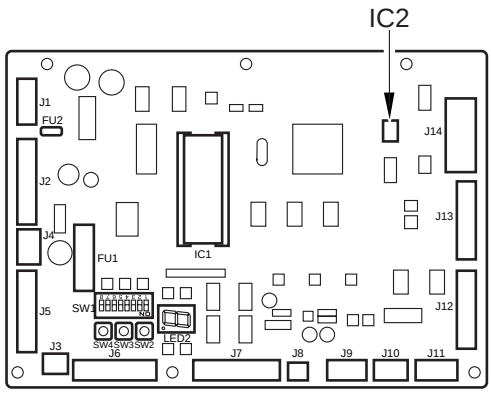
Major parts	Work	Ref.
• ADF controller PCB	1) Replacement of the EEPROM	p. 5-26
• EEPROM (memory back-up) • Reversal sensor (S1) • Pre-registration roller paper sensor (S2) • Post-registration roller paper sensor (S3) • Separation paper sensor (S4) • Skew paper sensor (S5) • Original sensor (S6) • Original trailing edge sensor (S7) • Pre-last original paper sensor (S8) • Manual feed registration roller paper sensor (S9) • Delivery motor (M5)	2) Adjust the sensors and the delivery motor.	p. 5-27

T05-102-01

1.2.2 Replacing the EEPROM

Perform the following when replacing the ADF controller PCB.

1) Remove the EEPROM (IC2) from the faulty ADF controller PCB.



F05-102-01

2) Mount the EEPROM removed in step 1) to the new ADF controller PCB.

Memo

The EEPROM on the new ADF controller PCB will not be used.

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3) Turn on the copier, and check to make sure that error code E420 is not indicated.
4) If error code E420 is indicated, mount back the EERPOM once removed from the new ADF controller PCB.
5) Perform the work under 1.2.3 “Adjusting the Sensors and the Delivery Motor.”

1.2.3 Adjusting the Sensors and the Delivery Motor

Perform the adjustment if you have replaced any of the following parts:

- EEPROM (memory backup)
- Reversal sensor (S1)
- Pre-registration roller senor (S2)
- Post-registration roller sensor (S3)
- Separation paper sensor (S4)
- Skew paper sensor (S5)
- Original sensor (S6)
- Original trailing edge sensor (S7)
- Pre-last original paper sensor (S8)
- Manual feed registration roller paper sensor (S9)
- Delivery motor (M5)

Memo

The delivery motor is adjusted by sending a reference signal to it, and the speed of rotation at that time is measured by the delivery motor clock sensor (PI11).
The result is used when generating the motor rotation speed control signal (EJMPWM*).

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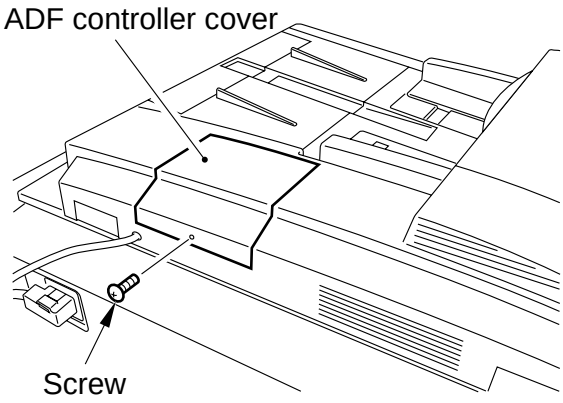
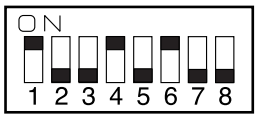
Steps to Take

1) Open the DADF, and make a single A4 copy of a solid black original.
2) Remove the screw, and detach the ADF controller cover.
3) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



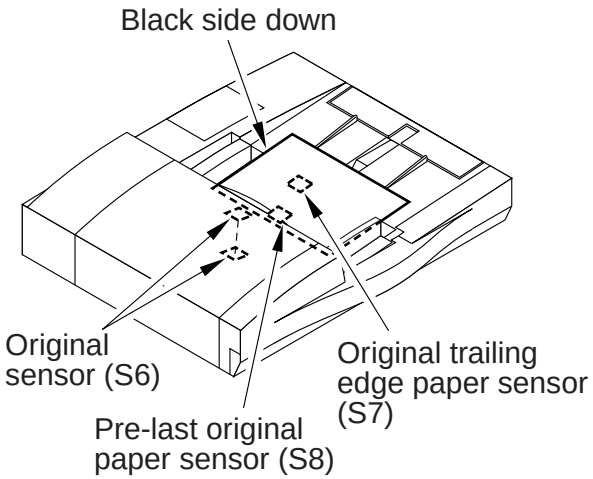
F05-102-02



F05-102-03

4) Place the output obtained in step 1) in the original tray with the black side facing down.

Take care not to cover the original sensor (S6) when placing the output.



F05-102-04

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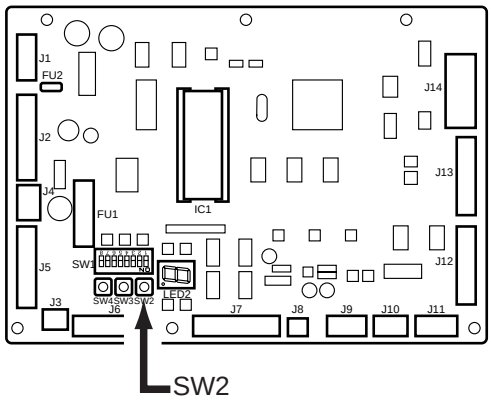
5) Press the push switch (SW2) on the ADF controller PCB.
   • The LED will indicate the following in sequence, showing the result at the end: 1, 2, 3, 4, 5, 6, 7, 8, 9, A.

Result	LED2 indication	Description
OK	(0)	All sensors (S1 through S9 are normal).
NG	(F)	Any of the sensors (S1 through S9) is faulty.

T05-102-02



F05-102-05

6) At the end of the operation, press the push switch (SW2) on the ADF controller PCB once again.

If the Result is NG

Check the condition of each of the sensors (S1 through S9), and replace the sensor considered to be faulty.

The condition of a sensor is indicated in the following three levels:

Condition	LED2 indication	Check or replace
Good	(≡)	No
Alarm 1	(=)	No
Alarm 2	(–)	Yes
Faulty	(F)	Yes

T05-102-03

1) While LED2 is indicating 'NG', press the push switch SW3 or SW4 to select the sensor.

Switch	LED2 indication	Sensor or motor in question
SW3	1	Original sensor (S6)
↓	2	Original trailing edge sensor (S7)
	3	Separation sensor (S4)
	4	Skew sensor (S5)
	5	Pre-registration roller paper sensor (S2)
	6	Post-registration paper sensor (S3)
	7	Reversal sensor (S1)
	8	Manual feed registration roller paper sensor (S9)
↑	9	Pre-last original paper sensor (S8)
SW4	A	Delivery motor (M5)

T05-102-04

2) At the end of the operation, press the push switch (SW2) on the ADF controller PCB.

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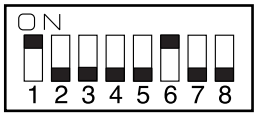
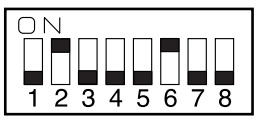
1.3 Auxiliary Adjustment

Item to adjust	Function	Ref.
Degree of arching at the registration roller when pickup is from the tray	Removing the skew for CW pickup	p. 5-31
Degree of arching at the registratoin roller at time of reversal	Removing the skew at time of reversal	p. 5-31
Degree of arching at the registration roller in manual feed mode	Removing the skew in manual feed mode	p. 5-31
Speed of the feeding belt	Fine-adjusting the reproduction ratio for stream reading mode	p. 5-34
Speed of reversal	Fine-adjusting the speed of reversal	p. 5-36
Checking the sensor output	Checking the presence/absence of paper over a specific sensor	p. 5-39

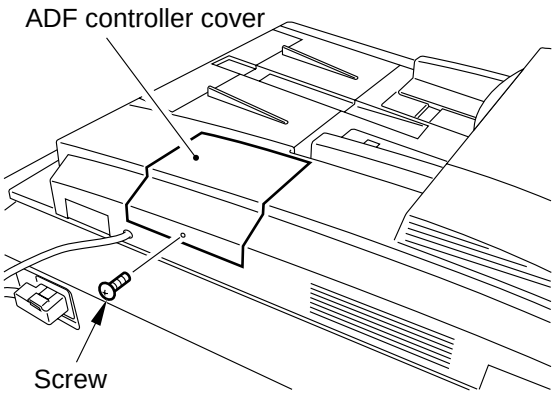
T05-103-01

1.3.1 Adjusting the Degree of Arching at the Registration Roller (pickup from the tray) Adjusting the Degree of Arching at the Registration Roller (at time of reversal) Adjusting the Degree of Arching at the Registration Roller (manual feed mode)

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as follows to suit the need:

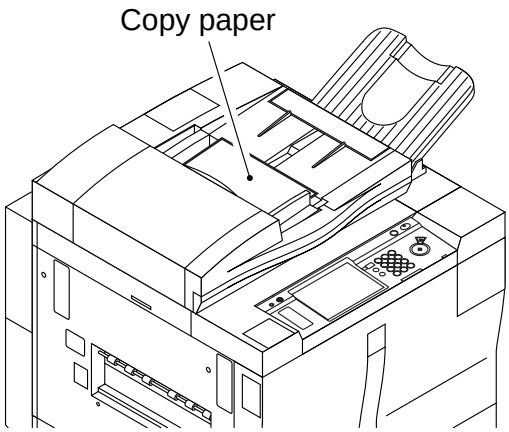
Item	Switch setting
Pickup from tray	
Reversal	
Manual feed	

T05-103-02



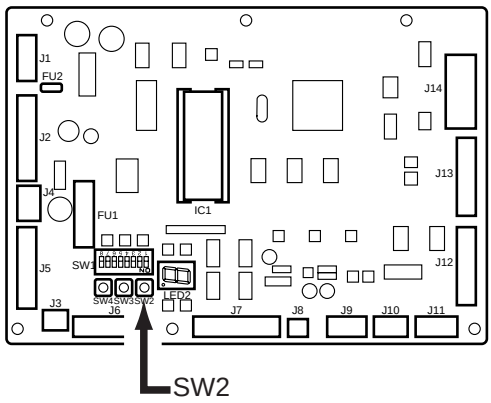
F05-103-01

3) Place a single sheet of A4 or LTR copy in the original tray.



F05-103-02

4) Press the push switch (SW2) on the ADF controller PCB.
   - The copy paper will be picked up and stopped on the copyboard glass.
   - LED2 will start to flash to indicate the current value.



F05-103-03

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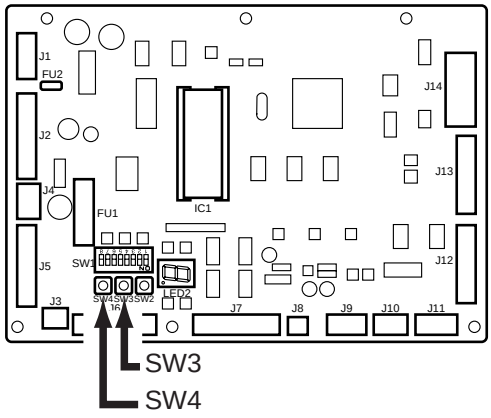
Switch	LED2 indication	Adjustment value*	Switch	LED2 indication	Adjustment value*	Switch	LED2 indication	Adjustment value*
SW3	A-E2	-30	SW3	A-F7	-9	SW3	A-0C	12
↓	A-E3	-29	↓	A-F8	-8	↓	A-0D	13
	A-E4	-28		A-F9	-7		A-0E	14
	A-E5	-27		A-FA	-6		A-0F	15
	A-E6	-26		A-Fb	-5		A-10	16
	A-E7	-25		A-FC	-4		A-11	17
	A-E8	-24		A-Fd	-3		A-12	17
	A-E9	-23		A-FE	-2		A-13	18
	A-EA	-22		A-FF	-1		A-14	19
	A-Eb	-21		A-00	0 (reference value)		A-15	20
	A-EC	-20		A-01	1		A-16	21
	A-Ed	-19		A-02	2		A-17	22
	A-EE	-18		A-03	3		A-18	23
	A-EF	-17		A-04	4		A-19	24
	A-F0	-16		A-05	5		A-1A	25
	A-F1	-15		A-06	6		A-1b	26
	A-F2	-14		A-07	7		A-1C	27
	A-F3	-13		A-08	8		A-1d	28
	A-F4	-12		A-09	9		A-1E	29
↑	A-F5	-11	↑	A-0A	10	↑	A-1F	30
SW4	A-F6	-10	SW4	A-0b	11	SW4	-	-

*0.1% (feed length).

T05-103-03

5) Press the push switch SW3 or SW4 on the ADF controller PCB to adjust the degree of arching by referring to the table.



F05-103-04

6) At the end of operation, press the push switch (SW2) on the ADF controller PCB once again.
   • The copy paper will be delivered, and the adjustment value will be stored in memory.

Switch	Change
SW3	Increases the arching.
SW4	Decreases the arching.

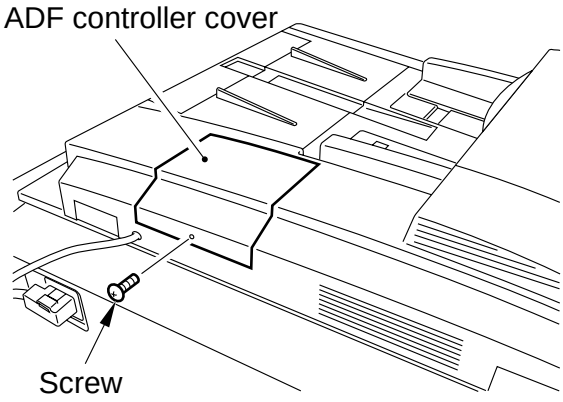
T05-103-04

1.3.2 Adjusting the Speed of the Feeding Belt

Memo

Adjusting the speed of the feeding belt will automatically adjust the speed of reversal.

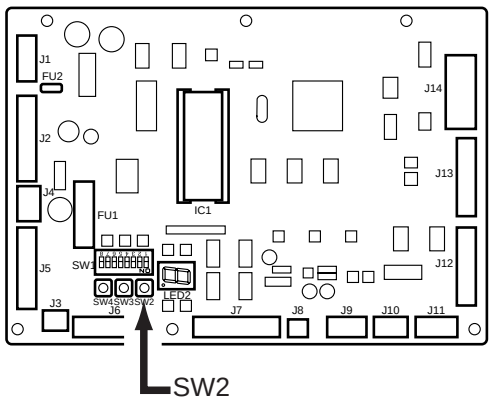
1) Remove the ADF cover, and set the DIP switch (SW1) on the ADF controller PCB as indicated.



F05-103-05

F05-103-06

2) Press the push switch (W2) on the ADF controller PCB.
   • LED2 will start to flash to indicate the current value.



F05-103-07

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Switch	LED2 indication	Adjustment value*	Switch	LED2 indication	Adjustment value*	Switch	LED2 indication	Adjustment value*
SW3	A-E2	-30	SW3	A-F7	-9	SW3	A-0C	12
↓	A-E3	-29	↓	A-F8	-8	↓	A-0D	13
	A-E4	-28		A-F9	-7		A-0E	14
	A-E5	-27		A-FA	-6		A-0F	15
	A-E6	-26		A-Fb	-5		A-10	16
	A-E7	-25		A-FC	-4		A-11	17
	A-E8	-24		A-Fd	-3		A-12	17
	A-E9	-23		A-FE	-2		A-13	18
	A-EA	-22		A-FF	-1		A-14	19
	A-Eb	-21		A-00	0 (reference value)		A-15	20
	A-EC	-20		A-01	1		A-16	21
	A-Ed	-19		A-02	2		A-17	22
	A-EE	-18		A-03	3		A-18	23
	A-EF	-17		A-04	4		A-19	24
	A-F0	-16		A-05	5		A-1A	25
	A-F1	-15		A-06	6		A-1b	26
	A-F2	-14		A-07	7		A-1C	27
	A-F3	-13		A-08	8		A-1d	28
	A-F4	-12		A-09	9		A-1E	29
↑	A-F5	-11	↑	A-0A	10	↑	A-1F	30
SW4	A-F6	-10	SW4	A-0b	11	SW4	-	-

*0.1% (image reproduction ratio).

T05-103-05

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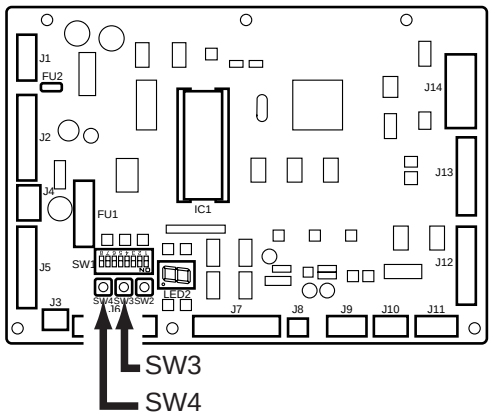
3) Press the push switch SW3 or SW4 on the ADF controller PCB, and adjust the speed of the belt by referring to the table.

Switch	Change
SW3	Increases the belt speed (decreasing the image).
SW4	Decreasing the belt speed (increasing the image).

T05-103-06

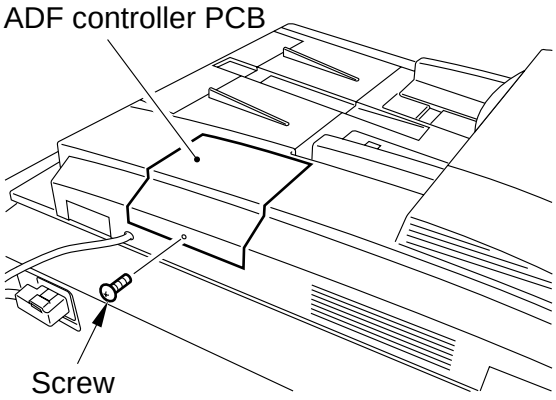


F05-103-08

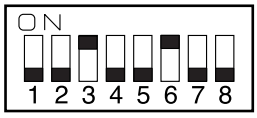
4) At the end of the operation, press the push switch (SW2) on the ADF controller PCB once again.

1.3.3 Adjusting the Speed of Reversal

1) Remove the ADF cover, and set the DIP switch (SW1) on the ADF controller PCB as indicated.



F05-103-09



F05-103-10

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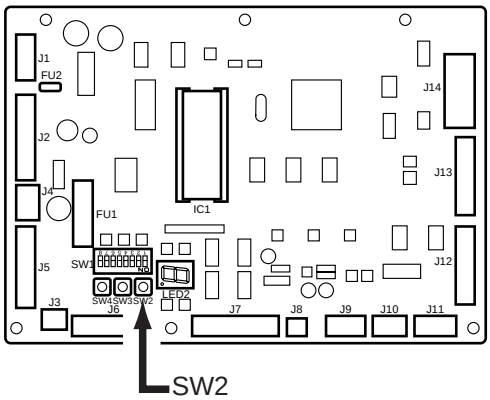
2) Press the push switch (SW2) on the ADF controller PCB.
• LED2 will start to flash to indicate the current value.



F05-103-11

Switch	LED2 indication	Adjustment value*	Switch	LED2 indication	Adjustment value*	Switch	LED2 indication	Adjustment value*
SW3	A-E2	-30	SW3	A-F7	-9	SW3	A-0C	12
↓	A-E3	-29	↓	A-F8	-8	↓	A-0D	13
	A-E4	-28		A-F9	-7		A-0E	14
	A-E5	-27		A-FA	-6		A-0F	15
	A-E6	-26		A-Fb	-5		A-10	16
	A-E7	-25		A-FC	-4		A-11	17
	A-E8	-24		A-Fd	-3		A-12	17
	A-E9	-23		A-FE	-2		A-13	18
	A-EA	-22		A-FF	-1		A-14	19
	A-Eb	-21		A-00	0 (reference value)		A-15	20
	A-EC	-20		A-01	1		A-16	21
	A-Ed	-19		A-02	2		A-17	22
	A-EE	-18		A-03	3		A-18	23
	A-EF	-17		A-04	4		A-19	24
	A-F0	-16		A-05	5		A-1A	25
	A-F1	-15		A-06	6		A-1b	26
	A-F2	-14		A-07	7		A-1C	27
	A-F3	-13		A-08	8		A-1d	28
	A-F4	-12		A-09	9		A-1E	29
↑	A-F5	-11	↑	A-0A	10	↑	A-1F	30
SW4	A-F6	-10	SW4	A-0b	11	SW4	-	-

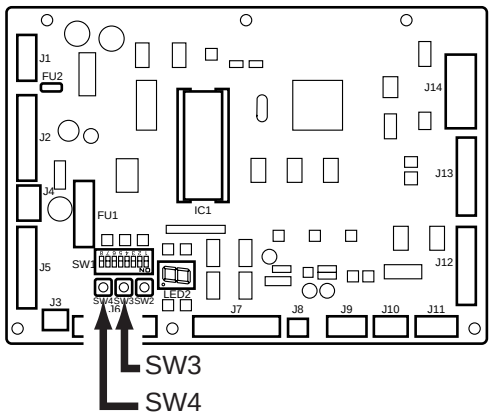
0.1% (rotation speed of reversal motor).

T05-103-07

3) Press the push switch SW3 or SW4 on the ADF controller PCB to adjust the speed of reversal by referring to the table.

Switch	Change
SW3	Increase the speed of reversal.
SW4	Decrease the speed of reversal.

T05-103-08



F05-103-12

4) At the end of the operation, press the push switch (SW2) on the ADF controller.

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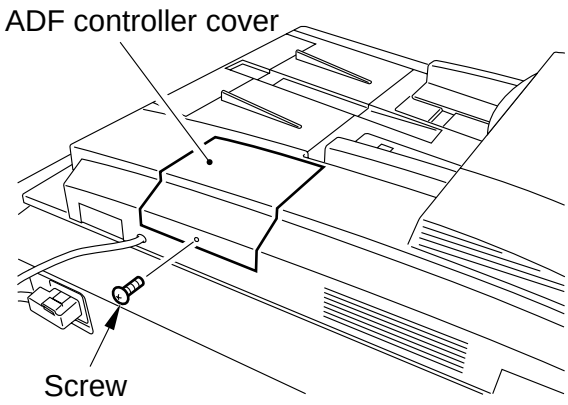
1.3.4 Checking the Sensor Output

The DADF uses a 7-segment LED (LED2) on its ADF controller PCB to allow a check on the presence/absence of paper or the state (open/closed) of the upper cover of the following sensors:

LED2	Sensor in question (notation)	LED2	Sensor in question (notation)
(1)	Original sensor (S6)	(7)	Reversal sensor (S1)
(2)	Original trailing edge sensor (S7)	(8)	Manual feed registration roller paper sensor (S9)
(3)	Separation sensor (S4)	(9)	Pre-last original paper sensor (S8)
(4)	Skew sensor (S5)	(a)	Pre-reversal sensor (PI4)
(5)	Pre-registration roller paper sensor(S2)	(b)	Original paper sensor (PI13)
(6)	Post-registration roller paper sensor (S3)	(c)	Manual feed set sensor (PI12)
		(d)	ADF closed/open sensor (PI10)
		(e)	Upper cover sensor (front; PI6)
		(f)	Upper cover sensor (rear; PI3)

T05-103-09

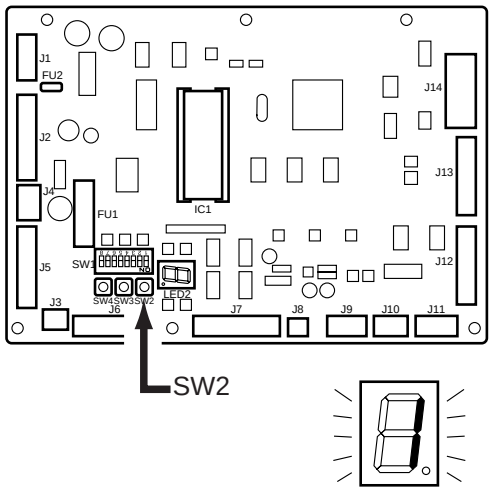
1) Remove the ADF controller cover, and set the DIP switch (SW1) on the ADF controller PCB as indicated (normal operation mode).



F05-103-13

F05-103-14

2) Press the push switch (SW2) once.
   • The 7-segment LED (LED2) on the ADF controller PCB will start to flash [1] to indicate that a check on the sensor operation has started.

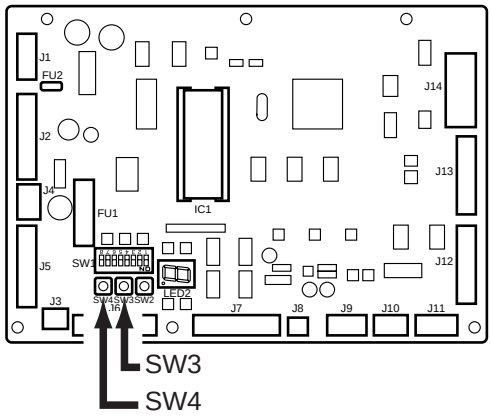


F05-103-15

3) Press the push switch SW3 or SW4; the indication of the 7-segment LED (LED2) will change to indicate the state (paper present/absent) of the sensor in question. (See T05-103-08.)

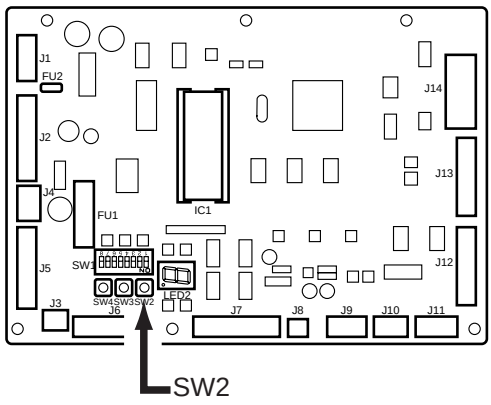
LED2 indication	Presence/absence of paper
ON	Present
Flashing	Absent

T05-103-10



F05-103-16

4) To end the check, press the push switch (SW2) once.
   • The LED2 indication will return to normal mode.



F05-103-17

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1.4 Indications

Item	Description	Ref.
Jam counter	Indicates the number of jams.	p. 5-40
Tray pickup counter	Indicates the number of pickups made for small-size originals and large-size originals.	p. 5-41
Manual feed pickup counter	Indicates the number of pickups for manually fed small-size originals and large-size originals.	p. 5-41
Jam history	Indicates the most recent 3 jams.	p. 5-42
Software version	Indicates the version of the software.	p. 5-43

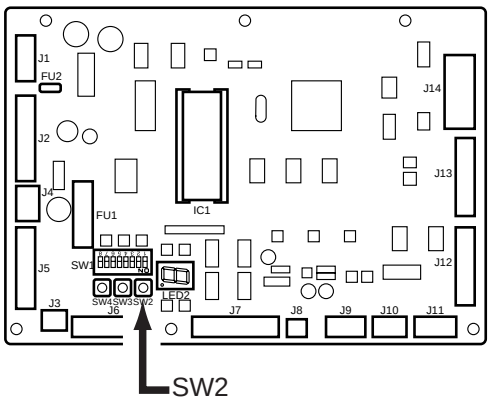
T05-104-01

1.4.1 Jam Counter

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

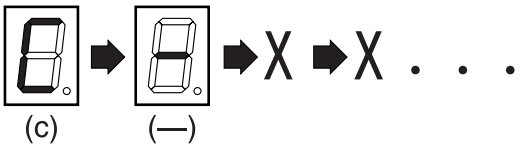
F05-104-01

3) Press the push switch (SW2) on the ADF controller PCB.



F05-104-02

3) Check the number of jams that occurred with reference to how LED2 flashes:
   • The maximum number of jams may be as high as '65,000'.

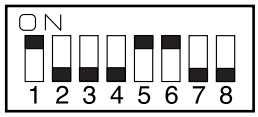


F05-104-03

4) At the end of the check, press the push switch (SW2) on the ADF controller PCB once again.

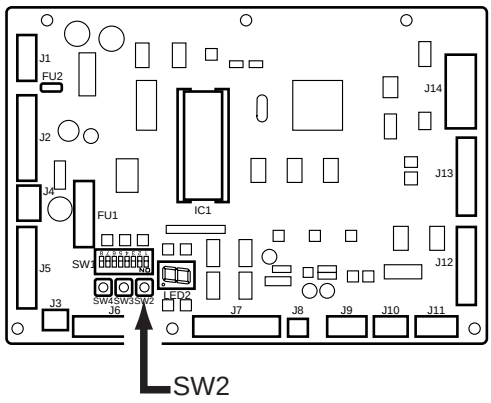
1.4.2 Tray Pickup Counter and Manual Feed Pickup Counter

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated to suit the need.

Item	Setting
Tray pickup counter	
Manual feed pickup counter	

T05-104-02

3) Press the push switch (SW2) on the ADF controller PCB.
   • LED2 will start to flash to indicate the total number of pickups made.



F05-104-04

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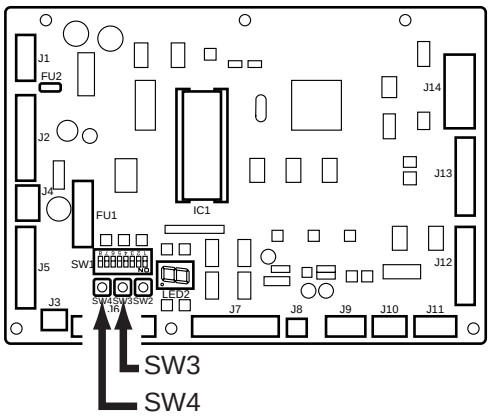
4) Press the push switches SW3 and SW4 on the ADF controller PCB to change the indication.

Switch	Indication	Description
SW3 ↓	A-XXXX	Total number
	S-XXXX	Number of small-size sheets
SW4 ↑	L-XXXX	Number of large-size sheets

T05-104-03



F05-104-05

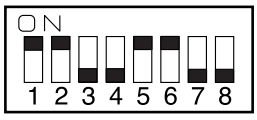
Memo

- The total number may be as high as '4,800,000'.
- The number of small-size and large-size sheets may be as high as '2,400,000'.
- In the case of pickup from the tray, the 1s place is set to '0' when the power is turned on.

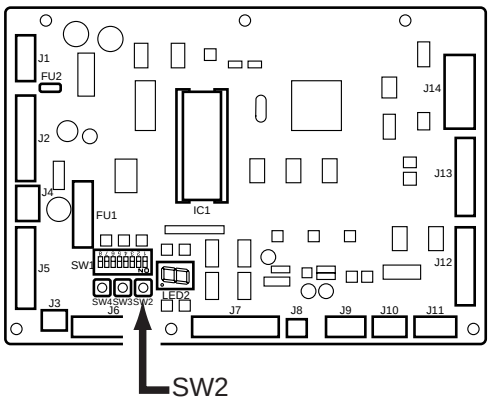
5) At the end of the check, press the push switch (SW2) on the ADF controller PCB once again.

1.4.3 Jam History

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.
3) Press the push switch (SW2) on the ADF controller PCB.
   - LED2 will indicate the latest jam code.



F05-104-06



F05-104-07

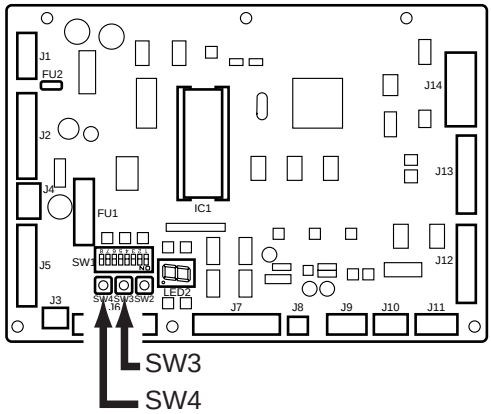
4) Press the push switches SW3 and SW4 to change the LED2 indication, thereby checking the jam history. LED2 will flash five times in sequence to indicate the nature of the jam.

Switch	LED2	Description
SW3 ↓	1-X1-X2-Y1-Y2	Previous (latest)
	2-X1-X2-Y1-Y2	2nd most recent
SW4 ↑	3-X1-X2-Y1-Y2	3rd most recent

X1,X2: Jam code

Y1,Y2: Not used

T05-104-04

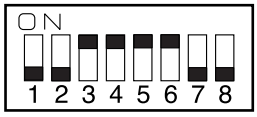


F05-104-08

5) At the end of the check, press the push switch (SW2) on the ADF controller PCB once again.

1.4.4 Version of the Software

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

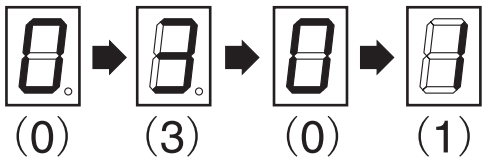


F05-104-09

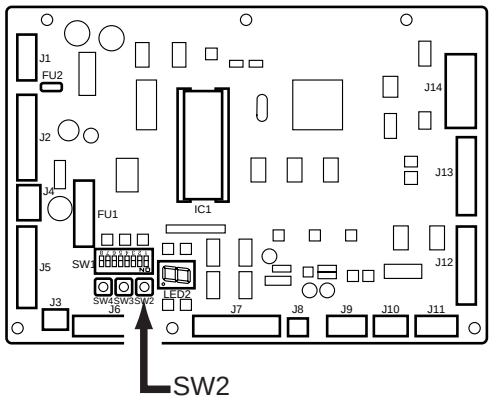
3) Press the push switch (SW2) on the ADF controller PCB.
   • LED2 will flash four times to indicate the version of the software.

   EX:

   If for Version 3.01,



4) Press the push switch (SW2) on the ADF controller PCB to end the indication.



F05-104-10

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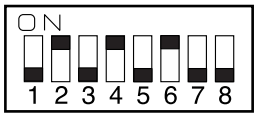
1.5 Cleaning

Item	Description	Ref.
Separation assembly	Clean the separation assembly using copy paper and alcohol.	p. 5-45
Registration roller (tray pickup)	1. If the dirt is limited, Execute automatic cleaning of the registration roller.	p. 5-47
	2. If dirt is appreciable, Clean the registration roller using lint-free paper and alcohol.	p. 5-48

T05-105-01

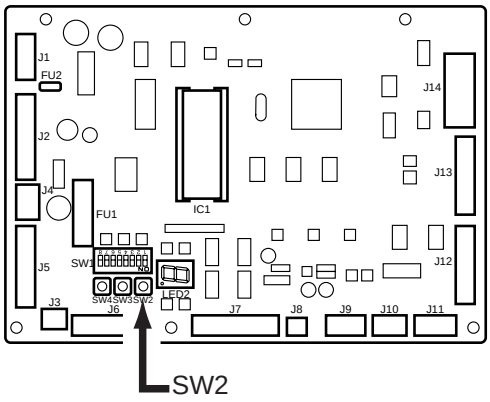
1.5.1 Cleaning the Separation Assembly

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



F05-105-01

3) Press the push switch (SW2) on the ADF controller PCB.

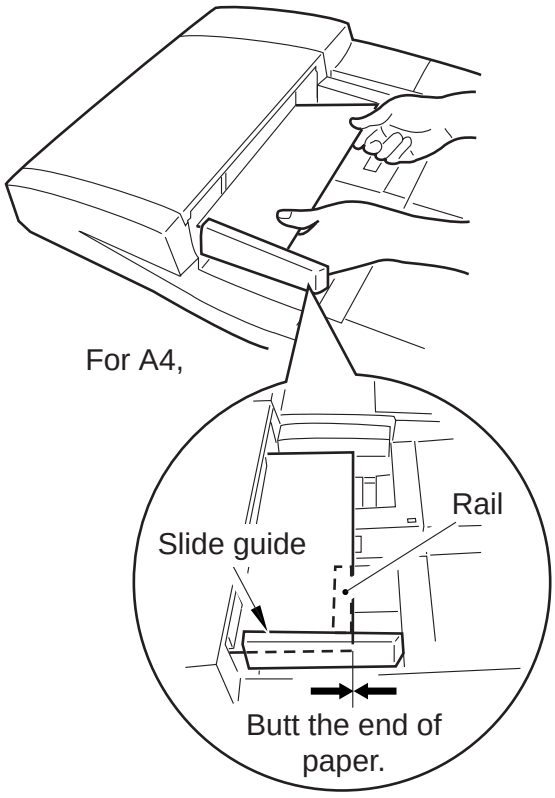


F05-105-02

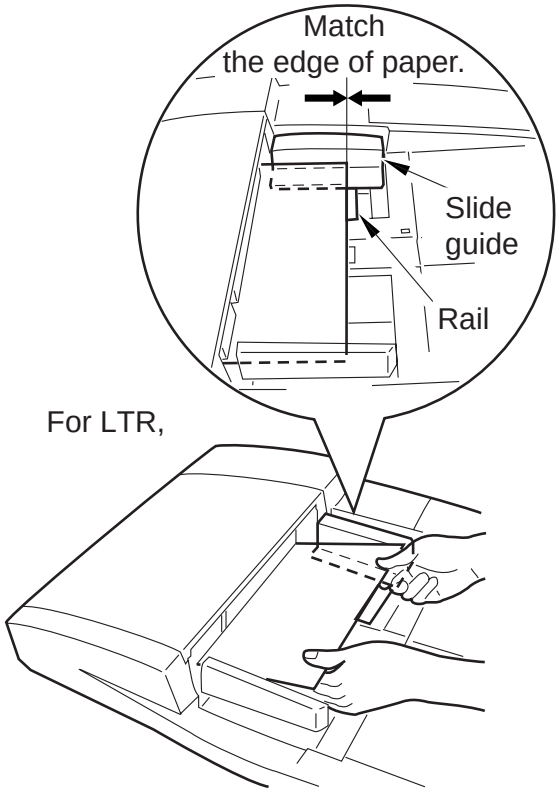
4) Moisten copy paper with alcohol, and slide it in while firmly holding on to its trailing edge.

Be sure to keep the trailing edge of the copy paper as indicated.

5) Press the push switch (SW2) on the ADF controller PCB to end the operation.



T05-105-03a



T05-105-03b

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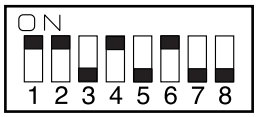
1.5.2 Cleaning the Registration Roller

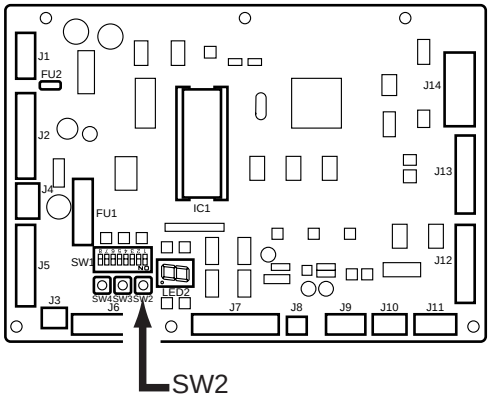
If the dirt is limited,

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



F05-105-04

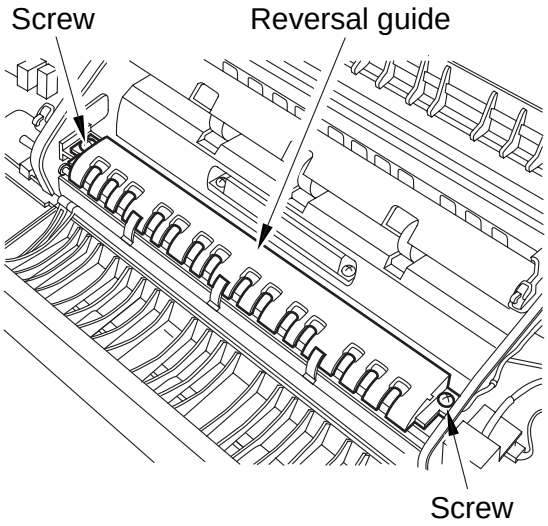
3) Place about ten sheets of copy paper in the original tray.
4) Press the push switch (SW2) on the ADF controller PCB.
   The operation will end automatically.



F05-105-05

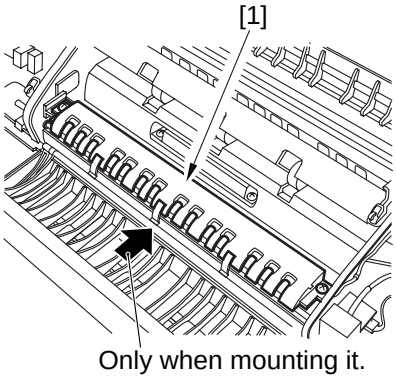
If dirt is appreciable,

1) Open the upper cover, and open the feeding guide.
2) Remove the two screws, and detach the reversal guide.



F05-105-06

When mounting the reversing guide, do so while forcing it in the direction of the arrow. If not mounted properly, it can trigger jams.



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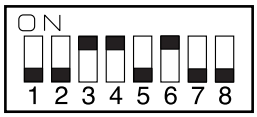
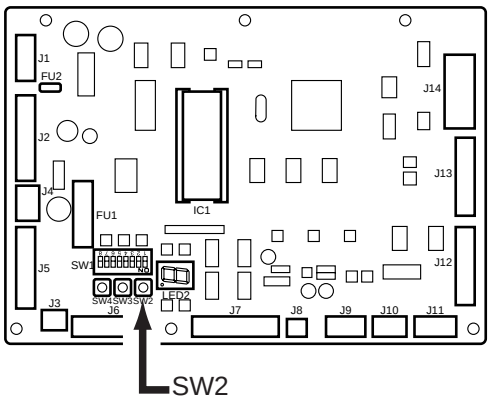
3) Remove the ADF controller cover, and set the DIP switch (SW1) ADF controller PCB as follows.



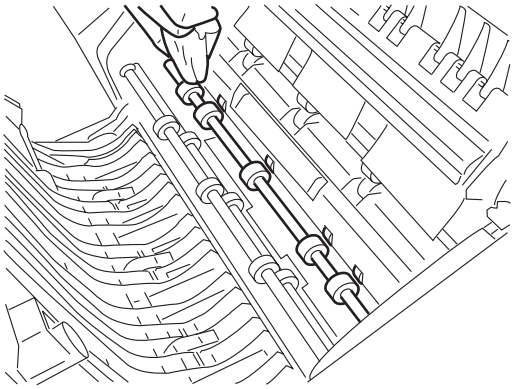
F05-105-07

4) Press the push switch (SW2) on the ADF controller PCB.
   • The reversing assembly will start to operate.



F05-105-08

5) Clean with lint-free paper moistened with alcohol.



F05-105-09

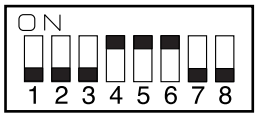
1.6 Others

Item	Description	Ref.
Checking the original width detecting switch (SW301)	Execute an automatic check on the original width detecting switch (SW301).	p. 5-48
Initializing the backup RAM	Initialize the backup RAM.	p. 5-49

T05-106-01

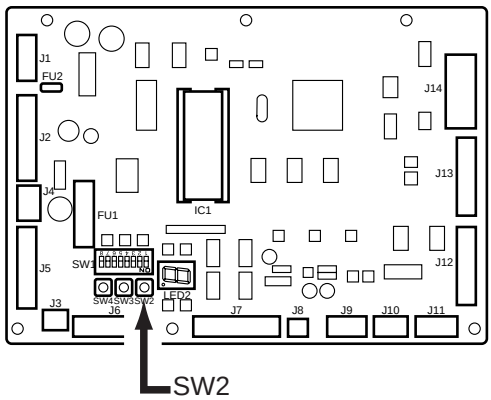
1.6.1 Checking the Original Width Detecting Switch (SW301)

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



F05-106-01

3) Press the push switch (SW2) on the ADF controller PCB.
   • LED2 will go on or flash to indicate the width of the original each time the position of the side guide is changed.



F05-106-02

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	LED2 indication	Default size
0	ON	A4
	Flash	Non-default
1	ON	LTR
	Flash	Non-default
2	ON	B4
	Flash	Non-default
3	ON	LTR
	Flash	Non-default
4	ON	A4
	Flash	Non-default
5	ON	ERROR*
	Flash	ERROR
6	ON	ERROR
	Flash	ERROR
7	ON	ERROR*
	Flash	ERROR

	LED2 indication	Default size
0	ON	B5R
	Flash	Non-default
1	ON	STMT
	Flash	Non-default
2	ON	B4
	Flash	Non-default
3	ON	STMT
	Flash	Non-default
4	ON	A5
	Flash	Non-default
5	ON	A5
	Flash	Non-default
6	ON	ERROR*
	Flash	ERROR
7	ON	ERROR*
	Flash	ERROR

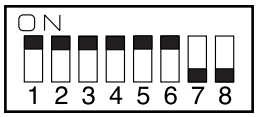
Note: The original width detecting switch (SW301) may be faulty.

T05-106-02

4) Press the push switch (SW2) on the ADF controller PCB to end the operation.

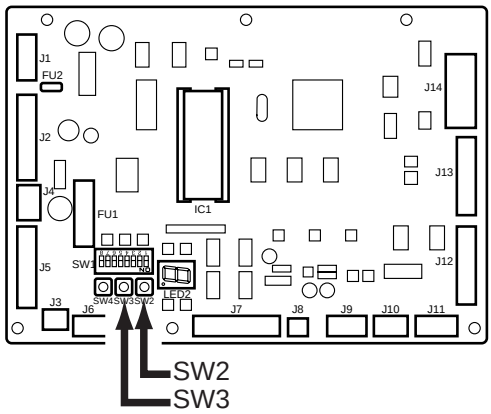
1.6.2 Initializing the Backup RAM

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



F05-106-03

3) Press the push switch (SW2) on the ADF controller PCB to start backup RAM clear mode.
   • LED2 will go off.
4) Press the push switch (SW3) five times in succession.
   • LED2 will indicate '0' and go through its sequence of indication.



F05-106-04

Memo

The counter data (jam, tray pickup, manual feed) cannot be initialized.

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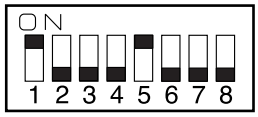
2 Troubleshooting

2.1 Troubleshooting Malfunctions

2.1.1 E402

1) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



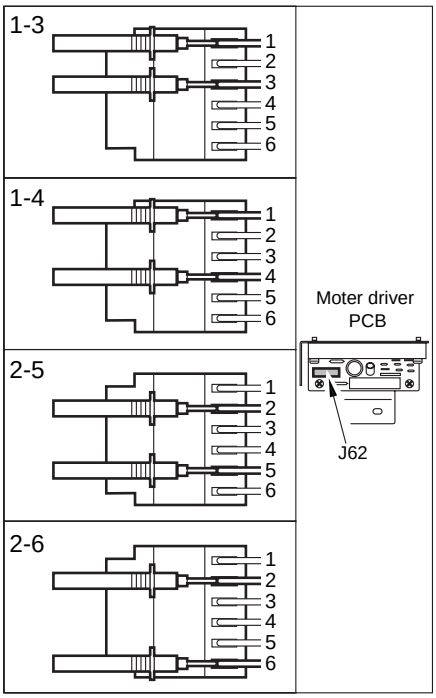
Press the push switch (SW2). Does the belt motor (SW2) rotate? (To stop the operation, press the push switch (SW2) once again.)

YES: Go to step 3).

Belt motor (M2)

2) Disconnect the connector (J62) of the belt motor driver PCB. Set the meter to x1Ω, and connect the meter probes to the connectors on the cable side as indicated. Is the resistance about 1.1Ω for each?

NO: Replace the belt motor (M2).



Belt motor clock sensor (PI1)	**3) Set the meter range to 10 VDC. Does the voltage between connectors J12-2 (+) and J12-1 (-) on the ADF controller PCB alternate between 0 and 5 V when the belt motor is rotated by hand?** NO: Replace the belt motor clock sensor (PI1).
Cable	**4) Is the cable between the belt motor driver PCB and the ADF controller PCB connected properly?** NO: Connect it properly.
Belt motor driver PCB, ADF controller PCB	**5) Try replacing the belt motor driver PCB. Is the problem corrected?** YES: Replace the belt motor drive PCB. NO: Replace the ADF controller PCB.

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2.1.2 E404

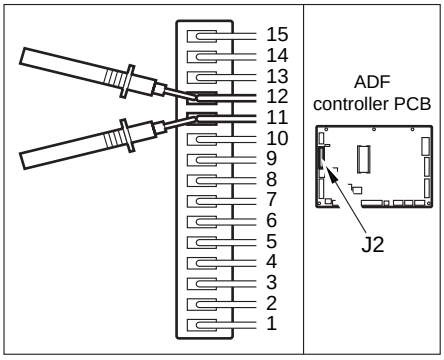
1) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

Does the delivery motor (M5) rotate when the push switch (SW2) is pressed?
(To stop the operation, press the push switch (SW2) once again.)

YES: Go to step 3).

Delivery motor (M5)

2) Disconnect the connector (J2) of the ADF controller PCB. Set the meter range to x1Ω, and connect the meter probes to the connectors on the connectors on the cable side as indicated. Is the resistance about 15Ω.



NO: Replace the delivery motor (M5).
After replacing the delivery motor, be sure to perform "Adjusting the Sensors and the Delivery Motor."

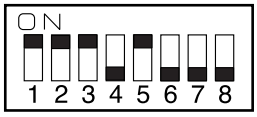
Delivery Motor Clock Sensor (PI11), ADF Controller PCB

3) Set the meter range to 10 VDC. Does the voltage between connectors J3-2 (+) and J3-1 (-) on the ADF controller PCB alternate between 0 and 5 V when the delivery motor is rotated by hand?

NO: Replace the delivery motor clock sensor (PI11).
YES: Replace the ADF controller PCB.

2.1.3 E405

1) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

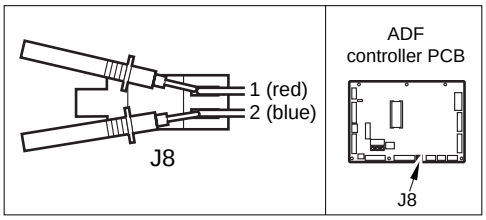


Does the separation motor (M4) rotate when the push switch (SW2) is pressed?
(To stop the operation, press the push switch (SW2) once again.)

YES: Go to step 3).

Separation motor (M4)

2) Disconnect the connector (J8) of the ADF controller PCB. Set the meter range to x1Ω, and connect the meter probe to the connectors on the cable side as indicated. Is the resistance about 5.0Ω?



NO: Replace the separation motor (M4).

Separation motor clock sensor (PI2), ADF controller PCB

3) Set the meter range to 10 VDC. Does the voltage between connectors J12-5 (+) and J12-4 (-) on the ADF controller PCB alternate between 0 and 5 V?

NO: Replace the separation motor clock sensor (PI2).

YES: Replace the DADF controller PCB.

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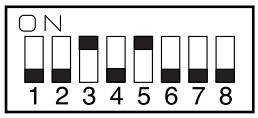
2.1.4 E410

1) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



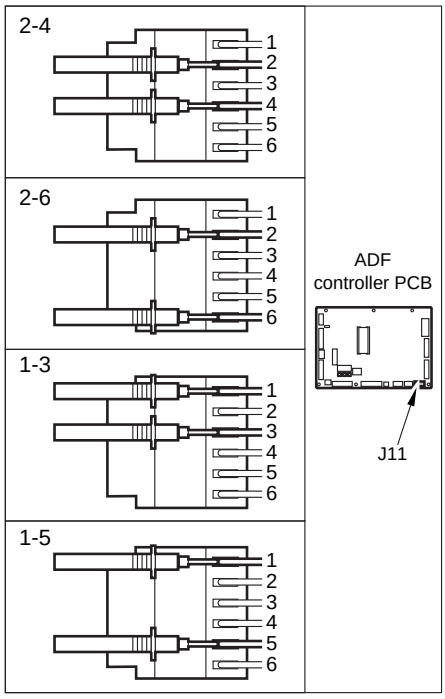
Does the motor (M3) rotate when the push switch SW2 and then the push switch SW3/SW4 are pressed?
(To stop the operation, press the push switch (SW2) once again.)

YES: Go to step 3).

Pickup motor (M3)

2) Disconnect the connector (J11) of the ADF controller PCB. Set the meter range to X1Ω, and connector the meter probe to the connectors on the cable side as indicated. Is the resistance about 74Ω for each?

NO: Replace the pickup motor (M3).



Pickup roller height sensor 1 (PI8)

3) Se the meter range to 10 VDC. Does the voltage between J14-A8 (+) and J14-A7 (-) on the ADF controller PCB alternate between 0 and 5 V when the pickup roller unit (rear) is moved up/down by hand?

NO: Replace the pickup roller height sensor 1 (PI8).

Pickup roller height sensor 2 (PI9)

4) Set the meter range to 10 VDC. Does the voltage between connectors J14-A1 (+) and J14-A10 (-) on the ADF controller PCB alternate between 0 and 5 V when the pickup roller unit (front) is moved up/down by hand?

NO: Replace the pickup roller height sensor 2 (PI9).

Pickup roller home position sensor (PI7)

5) Set the meter range to 10 VDC. Is the voltage between connectors J14-A5 (+) and J14-A4 (-) on the ADF controller PCB about 5 V when the pickup roller unit is returned to home position by hand?

NO: Replace the pickup roller home position sensor (PI7).

ADF controller PCB

6) Try replacing the ADF controller PCB. Is the problem corrected?

YES: Replace the ADF controller PCB.

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2.1.5 E422

Communication cable	**1) Is the cable between the copier and the DADF properly connected?** NO: Connect the cable properly.
Connector	**2) Is the connector (J1) on the ADF controller PCB properly connected?** NO: Connect the connector properly.
Cable, ADF controller PCB	**3) Is the cable from the connector (J1) on the ADF controller PCB to the communication cable connected properly?** NO: Connect the cable properly. YES: Replace the ADF controller PCB.

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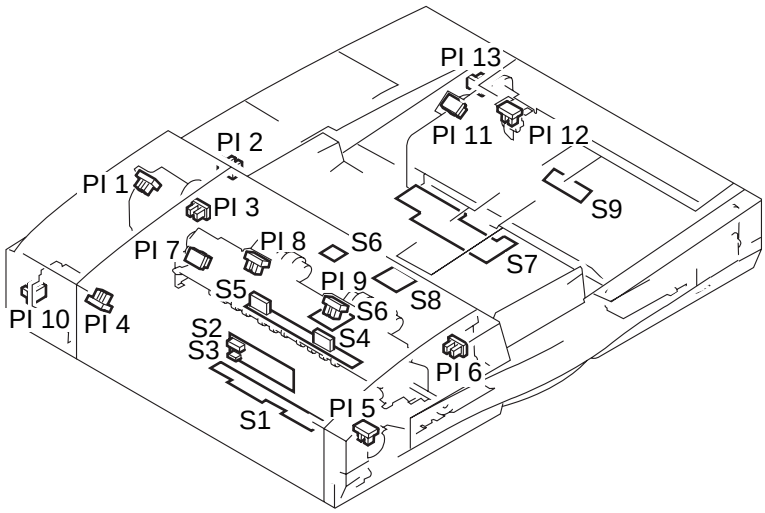
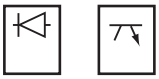
3 Arrangement of Electrical Components

3.1 Sensors



F05-301-01

Symbol	Name	Notation	Description
	Photointerrupter	PI 1	Belt motor clock detection
		PI 2	Separation motor clock detection
		PI 3	Left cover open/closed detection (rear)
		PI 4	Pre-reversal paper detection
		PI 5	Registration roller rotation detection
		PI 6	Left cover open/closed detection (front)
		PI 7	Pickup roller home position detection
		PI 8	Pickup roller height detection 1
		PI 9	Pickup roller height detection 2
		PI 10	ADF open/closed detection
		PI 11	Delivery motor clock detection
		PI 12	Manual feed set detection
		PI 13	Original delivery detection
	Reflecting type sensor	S1	Reversing assembly paper detection
		S2	Pre-registration roller paper detection
		S3	Post-registration roller paper detection
		S4	Separation paper detection
		S5	Skew paper detection
		S6	Original detection
		S7	Original trailing edge detection
		S8	Pre-last original detection
		S9	Manual feed registration roller paper detection

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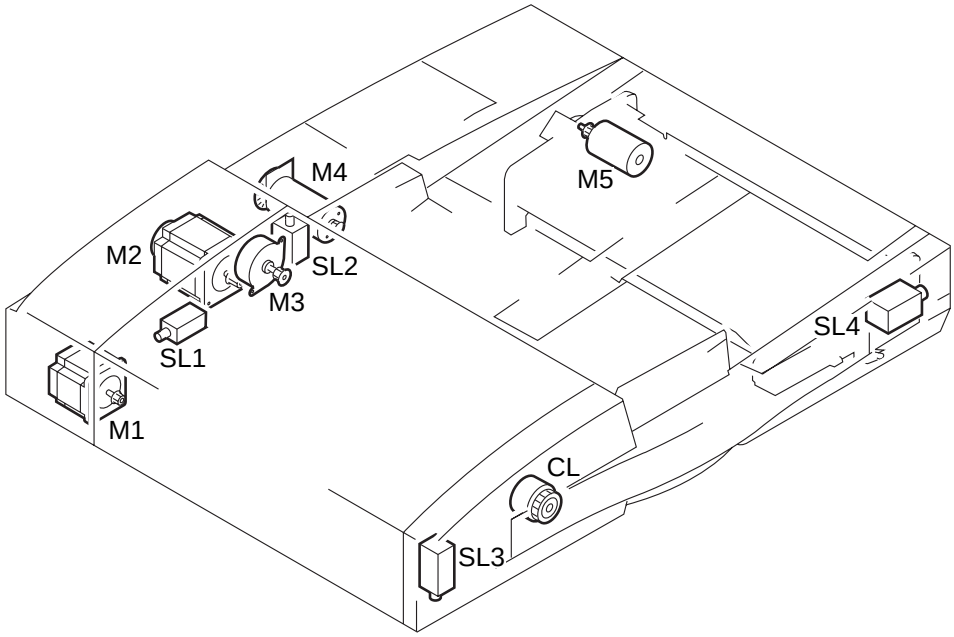
3.2 Motors, Clutches, and Solenoids

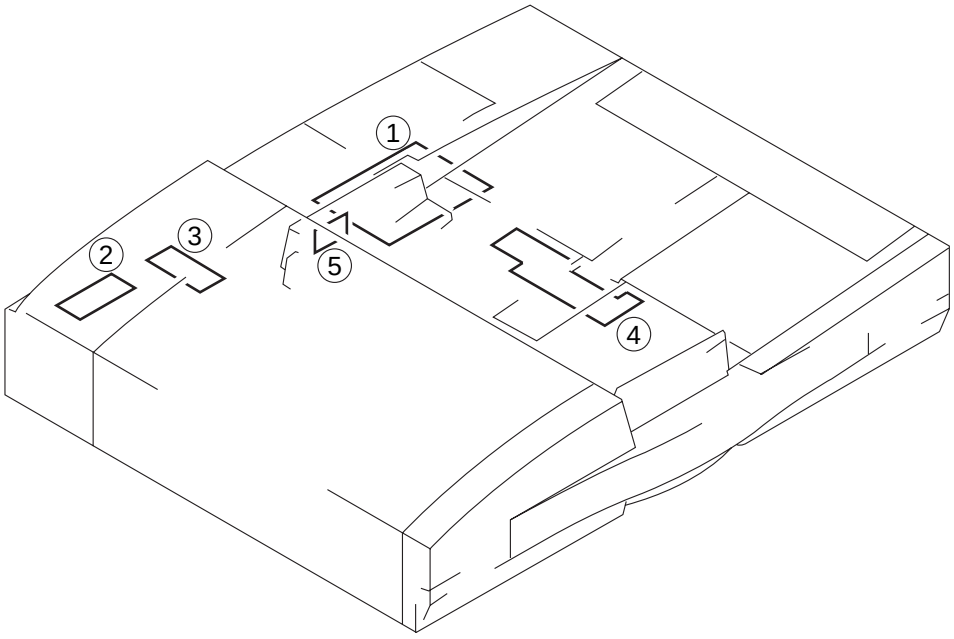


F05-302-01

Symbol	Name	Notation	Description
M	Motor	M1	Reversal motor
		M2	Belt motor
		M3	Pickup motor
		M4	Separation motor
		M5	Delivery motor
CL	Clutch	CL	Separation clutch
SL	Solenoid	SL1	Reversing solenoid
		SL2	Stopper plate solenoid
		SL3	Pre-reversal solenoid
		SL4	Delivery solenoid
	Fan	FM1	Belt motor cooling fan

T05-302-01

3.3 PCBs



F05-303-01

Reference	Name
1	ADF controller PCB
2	Reversal motor driver PCB
3	Belt motor driver PCB
4	Pickup tray PCB
5	Indication LED PCB

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4 LEDs, Check Pins, and Switches by PCB

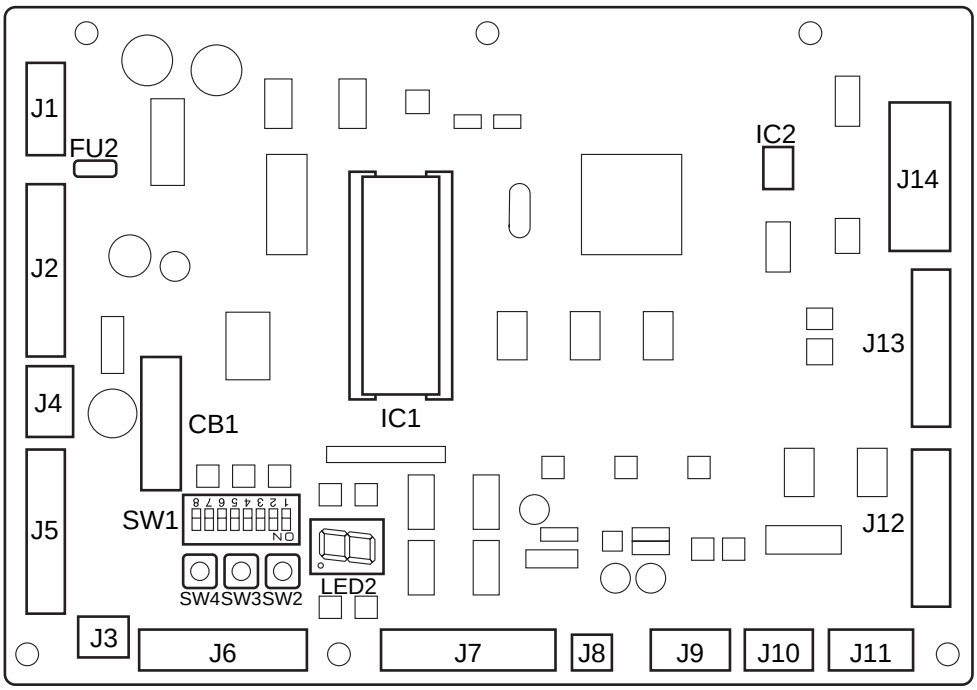
Of the LEDs and check pins found in the machine, those used in the field are discussed:

Do not touch any check pins that are not indicated in the table. They are for the factory, and require special tools and high precision.

4.1 ADF Controller PCB

Some LEDs emit light when they are off because of leakage current. This is a normal condition, and must be kept in mind.

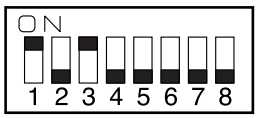
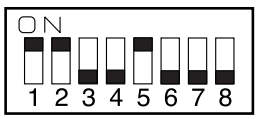
4.1.1 Arrangement of Components



F05-401-01

4.1.2 DIP Switch Functions

The DIP switch (SW1) on the ADF controller PCB provides the following functions according to how it is set:

Function	Setting	Description
Normal operation		Normal Operation
Operation Check		Single-Sided Intermittent Feed Press the push switch SW2 on the ADF controller PCB; thereafter, each press on the push switch SW2 will send the original intermittently.
		Double-Sided Intermittent Feed Press the push switch SW2 on the ADF controller PCB; thereafter, each press on the push switch SW2 will send the original intermittently.
		Belt Motor (M2) Drive Press the push switch SW2 on the ADF controller PCB to start it; another press will stop it. The operation will be as follows, executed automatically: CW (700 -> 520 -> 260 -> 30 mm/sec) -> (700 -> 520 -> 260 -> 130 mm/sec).
		Reversal Motor (M1) Drive Press the push switch SW2 on the ADF controller PCB to start it; another press will stop it. The operation will be as follows, executed automatically: CW (700 -> 520 -> 260 -> 130 mm/sec) -> CCW (700 -> 520 -> 260 -> 130 mm/sec).
		Delivery Motor (M5) Drive Press the push switch SW2 on the ADF controller PCB to start it; another press will stop it. While in operation, each press on the push switch SW3 changes the speed of motor rotation to 100 mm/sec (700 -> 100 mm/sec).
		Pickup Motor (M3) Drive Press the push switch (SW2) on the ADF controller PCB; press SW3 to move up or SW4 to move down. Another press on SW2 will stop it.

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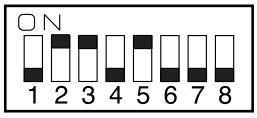
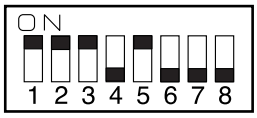
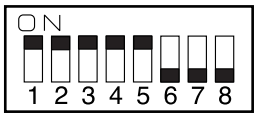
Function	Setting	Description
Operation Check		Solenoid/Clutch Drive Press the push switch SW2 on the ADF controller PCB to execute the following in sequence; the operation will end automatically: Stopper plate solenoid (SL2) ↓ Delivery solenoid (SL4) ↓ Pre-reversal solenoid (SL3) ↓ Reversal solenoid (SL1) ↓ Clutch (CL)
		Separation Motor (M4), Clutch (CL) Drive Press the push switch (SW2) on the ADF controller PCB to start it; another press will stop it. While in operation, each press on the push switch SW3 changes the speed of motor rotation to 100 mm/sec. (700 -> 100 mm/sec)
		Manual Feed Operation Place an original in the manual feed assembly, and press the push switch (SW2) on the ADF controller PCB so that the original will be picked up and stopped.
Adjustment		Tray Pickup Arch Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch S23/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting. (For details, see p. 5-31.)
		Reversal Arch adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting. (For details, see p. 5-31.)

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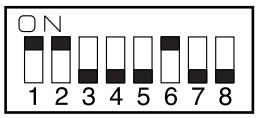
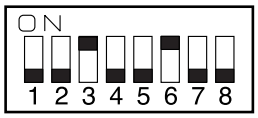
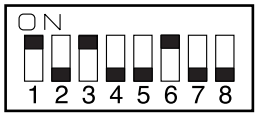
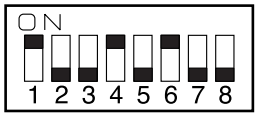
Function	Setting	Description
Adjustment		Manual Feed Arch Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting. (For details, see p. 5-31.)
		Feeding Belt Speed Adjustment (reproduction ratio in stream reading) Press the push switch SW2 on the ADF controller to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting. (For details, see p. 5-34.)
		Reversal Speed Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting. (For details, see p. 5-36.)
		Original Stop Position Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting. (For details, see p. 5-20.)
		Manual Feed Original Stop Position Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. A the end, press the push switch SW2 to store the new setting. (For details, see p. 5-23.)
		Sensor and Delivery Motor Auto Adjustment Press the push switch SW2 on the ADF controller PCB. The operation will end automatically. (For details, see p. 5-27.)

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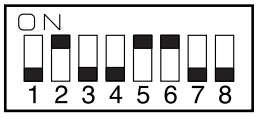
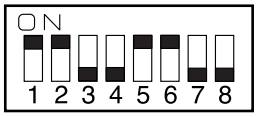
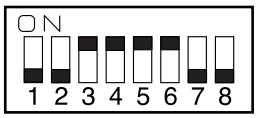
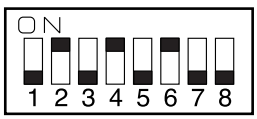
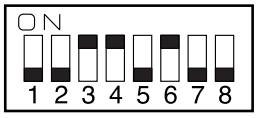
Function	Setting	Description
Indication		Jam Counter Indication The number of jams in the DADF will be indicated by LED2 on the ADF controller PCB. (For details, see p. 5-41.)
		Tray Pickup Counter Indication The number of left pickups in the DADF will be indicated by LED2 on the ADF controller PCB. (For details, see p. 5-42.)
		Manual Feed Pickup Counter Indication The number of manual feed pickups in the DADF will be indicated by LED2 on the ADF controller PCB.
		Jam History Indication The jam history of the DADF will be indicated by LED2 on the ADF controller PCB (most recent three jams). (For details, see p. 5-43.)
		Software Version Indication Press the push switch SW2 on the ADF controller PCB to indicate the version of the software; another press will stop the indication. (For details, see p. 5-44.)
Cleaning		Separation Assembly Cleaning Press the push switch (SW2) on the ADF controller PCB to rotate the registration roller; another press will stop the operation. (details, see p. 5-45.)
		Registration Roller Cleaning
		If the dirt is limited,
		Place 10 sheets of copy paper in the original tray, and press the push switch on the ADF controller PCB. The operation will end automatically. (For details, see p. 5-47.)
		If the dirt is appreciable,
		Press the push switch SW2 on the ADF controller PCB. When the registration roller starts to rotate, clean with lint-free paper moistened with alcohol. To stop operation, press the push switch SW2 once again. (For details, see p. 5-48.)

T05-401-01d

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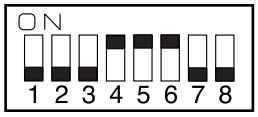
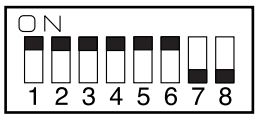
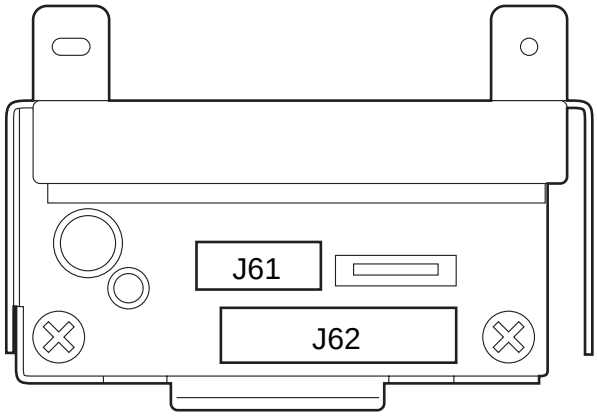
Function	Setting	Description
Others		Original Width Detecting Switch (SW301) Check Press the push switch SW2 on the ADF controller PCB to start it; another press will stop it. (For details, see p. 5-50.)
		Backup RAM Clear Press the push switch SW2 on the ADF controller PCB; press the push switch SW3 five times in succession to automatically end backup RAM clear. The counter data (jam, tray pickup, manual feed pickup) will not be initialized. (For details, see p. 5-51.)

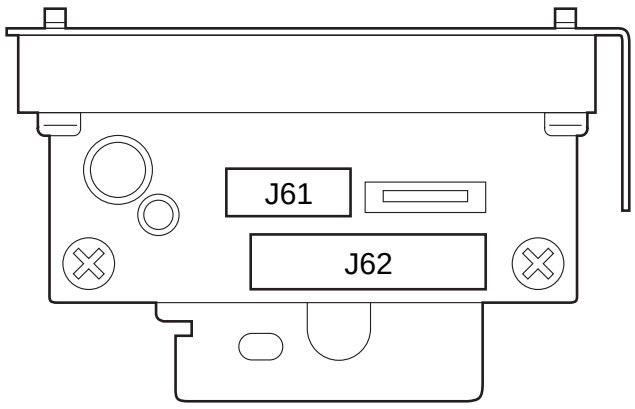
T05-401-01e

4.2 Reversal Motor Driver PCB



F05-402-01

4.3 Belt Motor Driver PCB



F05-403-01

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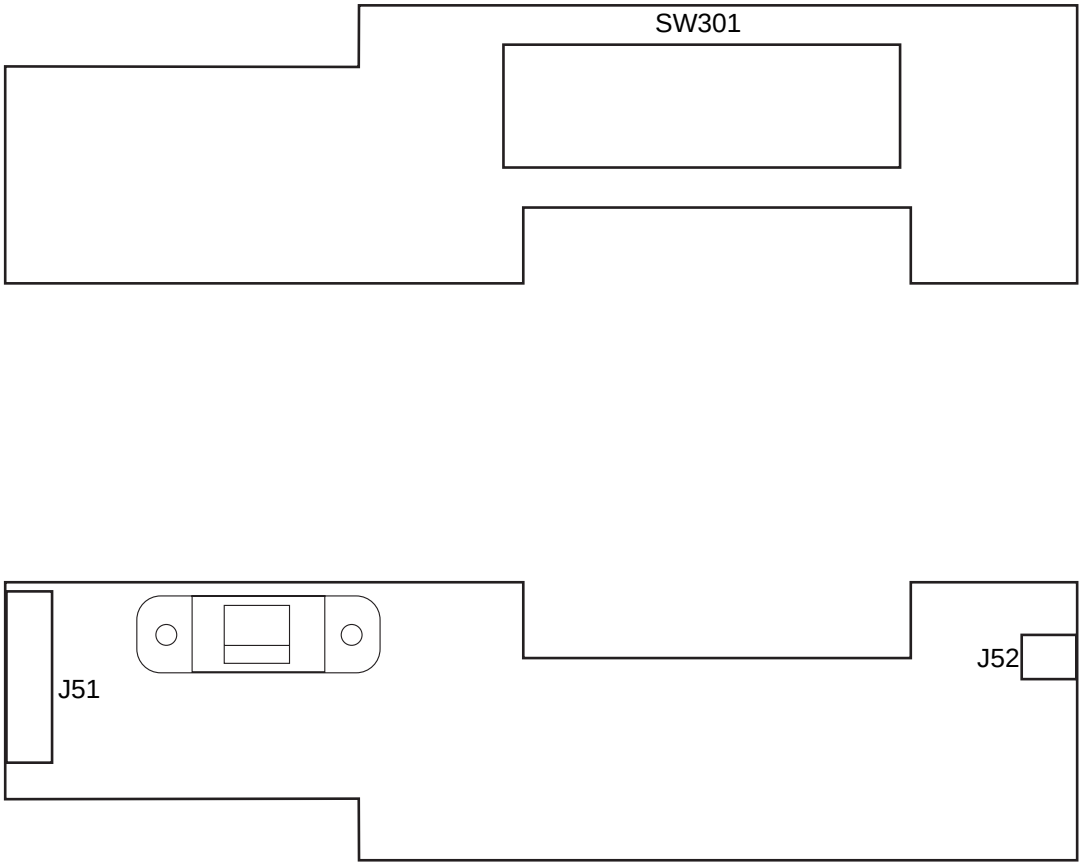
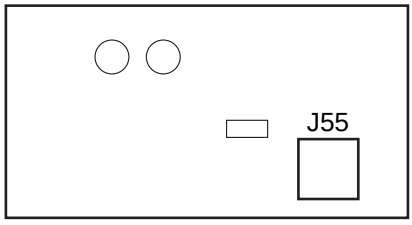
4.4 Pickup Tray PCB



F05-404-01

4.5 Indication LED PCB

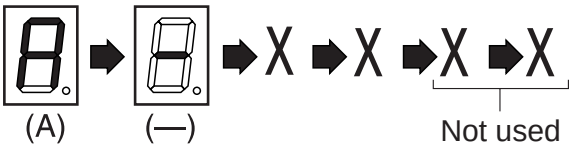
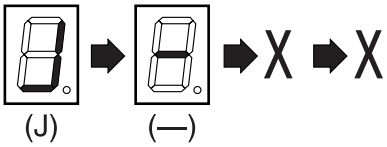
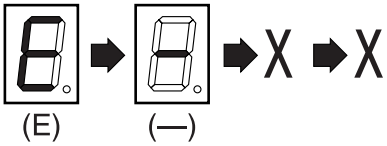


F05-405-01

5 Self Diagnosis

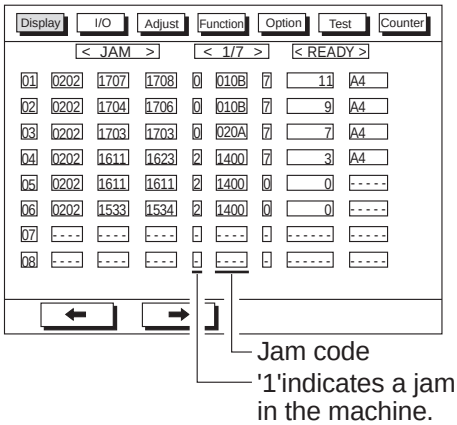
5.1 Outline

The microprocessor on the DADF's ADF controller PCB is equipped with a function to check the condition of the machine. When it detects a fault, it will communicate the fact to the copier in the form of a code. The communication may be any of the following three, which may be checked by referring to the Original Set indicator or LED2 on the ADF controller PCB.

Fault	Original Set indicator	LED2 indication (code)
Alarm	Flashing at intervals of 240 msec	
Jam	Flashing at intervals of 160 msec	
Error	Flashing at intervals of 80 msec	

T05-501-01

An alarm code or a jam may be checked in the copier's service mode. In response to a fault, the copier's display will indicate its presence in the form of an error code.



F05-501-01

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5.2 Alarms

The DADF may issue the following alarms:

Indication	Description	DADF operation	Copier operation	Resetting
03xx	After an original has been separated and moved over a specific distance, the separation sensor does not detect the original.	Stops operation, and flashes the Original Set indicator.	Stops the ongoing operation.	Remove the original, and place it once again.
11xx	At time of jam recovery, the last original is detected before originals for recovery (in reference to the number of originals) have been moved.	Stops the operation, and flashes the Original Set indicator.	Stops the ongoing operation.	Remove the originals, and put them back as they were.

T05-502-01

5.3 Jams

For descriptions of the types of jams, see 3. “Jams” on p. 2-74.

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5.4 Errors

E400	
Cause	The combination cable between the DADF and the copier is faulty. The ADF controller PCB is faulty.
Detection	While the DADF is in standby, the communication with the copier is disrupted for 5 sec or more. While the DADF is in operation, the communication with the copier is disrupted for 0.5 sec or more.
E402	
Cause	The belt motor (M2) is faulty. The belt motor clock sensor (PI1) is faulty. The ADF controller PCB is faulty.
Detection	When the belt motor drive signal is generated, no clock signal is detected for 100 msec.
E404	
Cause	The delivery motor (M5) is faulty. The delivery motor clock sensor (PI11) is faulty. The ADF controller PCB is faulty.
Detection	When the delivery motor drive signal is generated, no clock signal is detected for 200 msec.
E405	
Cause	The separation motor (M4) is faulty. The separation motor clock sensor (PI2) is faulty. The ADF controller PCB is faulty.
Detection	When the separation motor drive signal is generated, no clock signal is generated for 200 msec.

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E410	
Cause	The pickup motor (M3) is faulty. The pickup roller height sensor 1 (PI8) is faulty. The pickup roller height sensor 2 (PI9) is faulty. The pickup roller home position sensor (PI7) is faulty. The ADF controller PCB is faulty.
Detection	The pickup roller height sensor 1 (PI8) and the pickup roller height sensor 2 (PI9) do not generate a signal within 2 sec after the pickup motor has been driven. The pickup roller home position sensor (PI7) does not generate a signal within 2 sec after the pickup motor has been driven.
E420	
Cause	The backup data cannot be read; or, the data that has been read has an error.
Detection	When the copier is turned on, the backup data cannot be read twice; or, the data that has been read has an error.

T05-504-01b

APPENDIX

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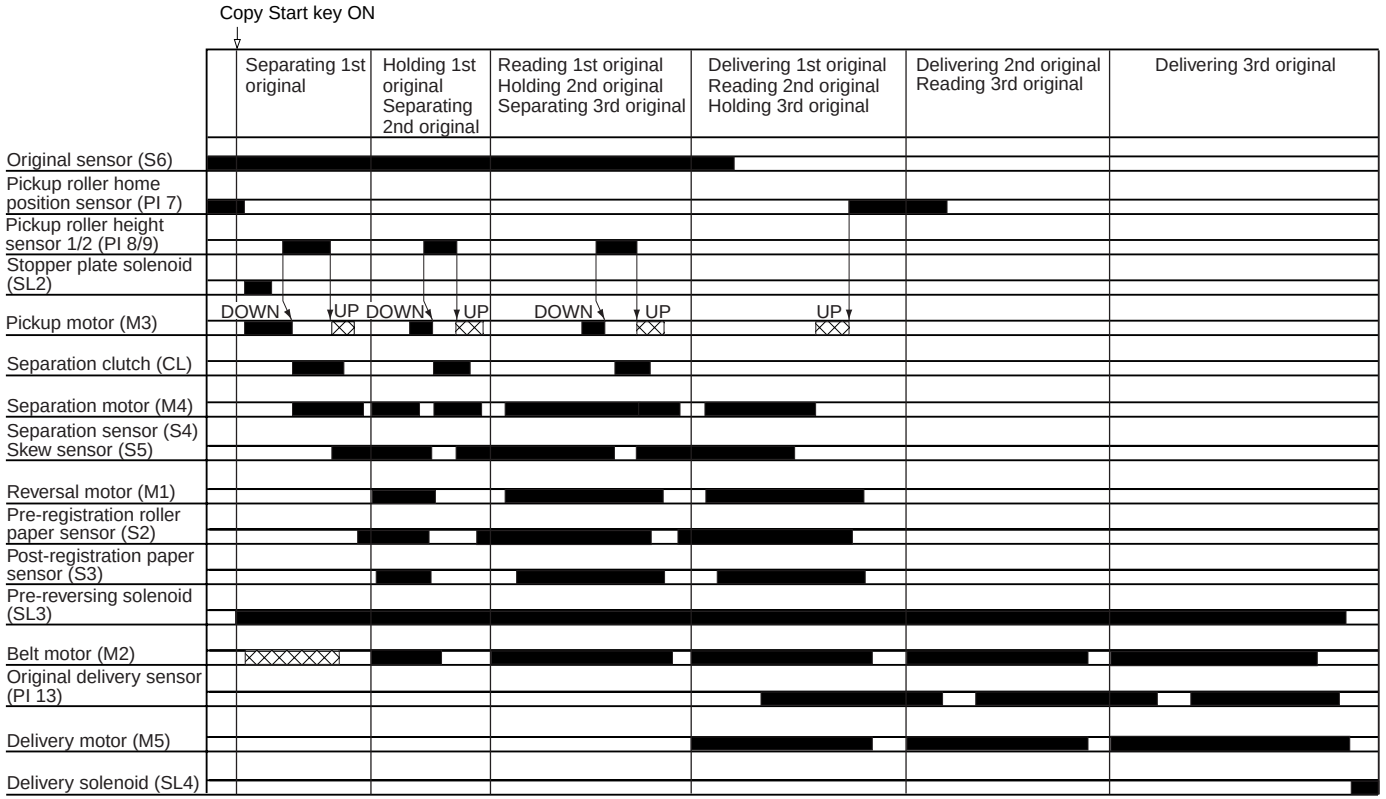
1 General Timing Chart

1.1 A4, 3 Single-Sided Originals, Stream Reading



⊠ : motor CCW rotation.

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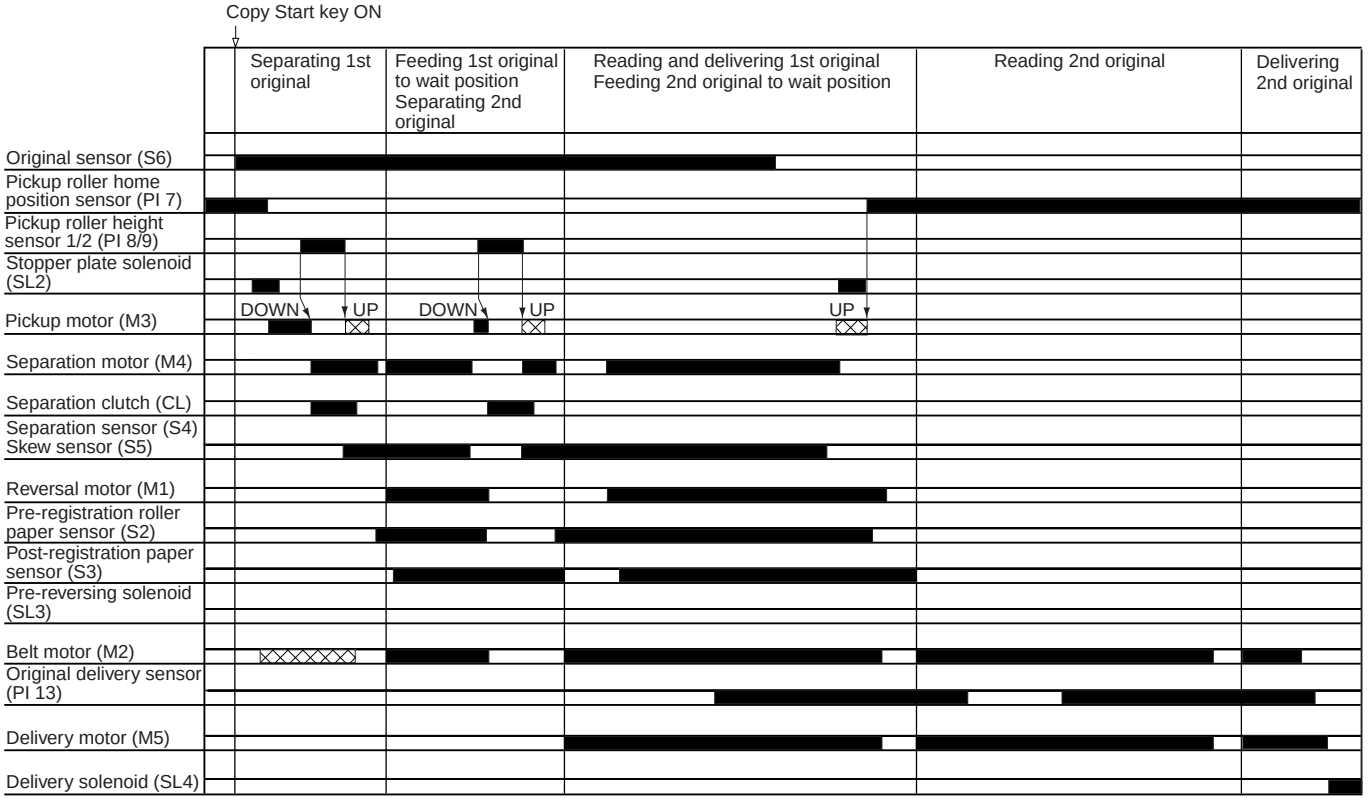
1.2 A3, 2 Single-Sided Originals, Stream Reading



: motor CCW rotation.

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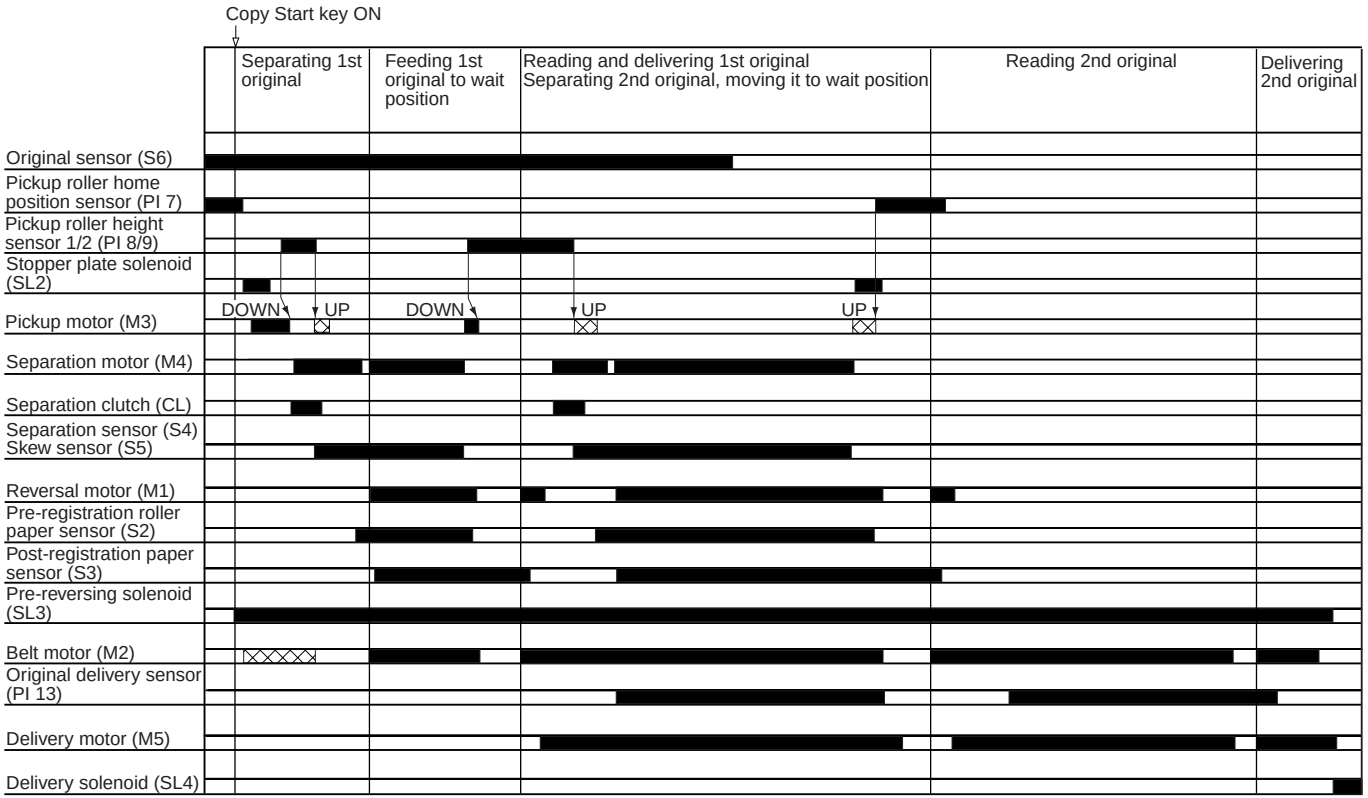
1.3 279.4x431.8 mm (11"x17"), 2 Single-Sided Originals, Stream Reading



: motor CCW rotation.

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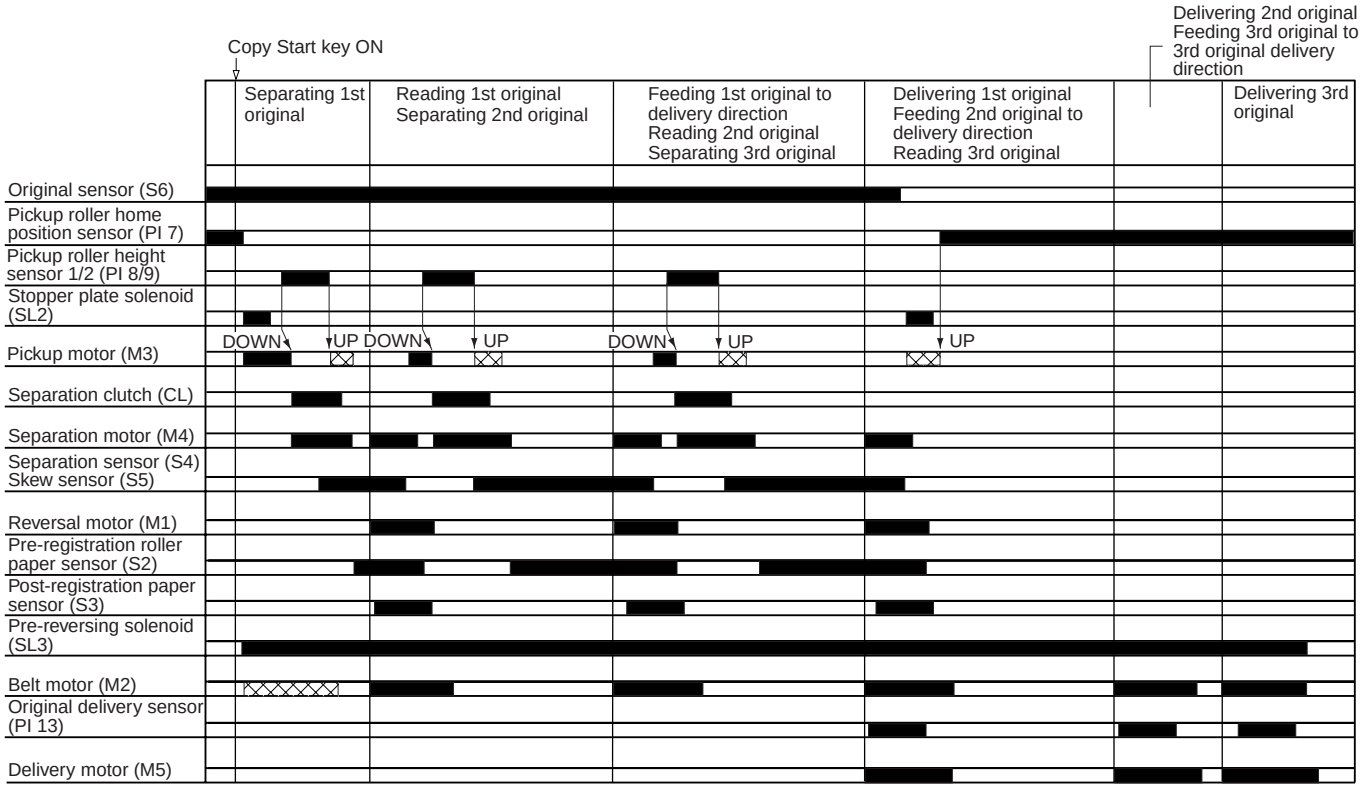
1.4 A4, 3 Single-Sided Originals, Fixed Reading



: motor CCW rotation.

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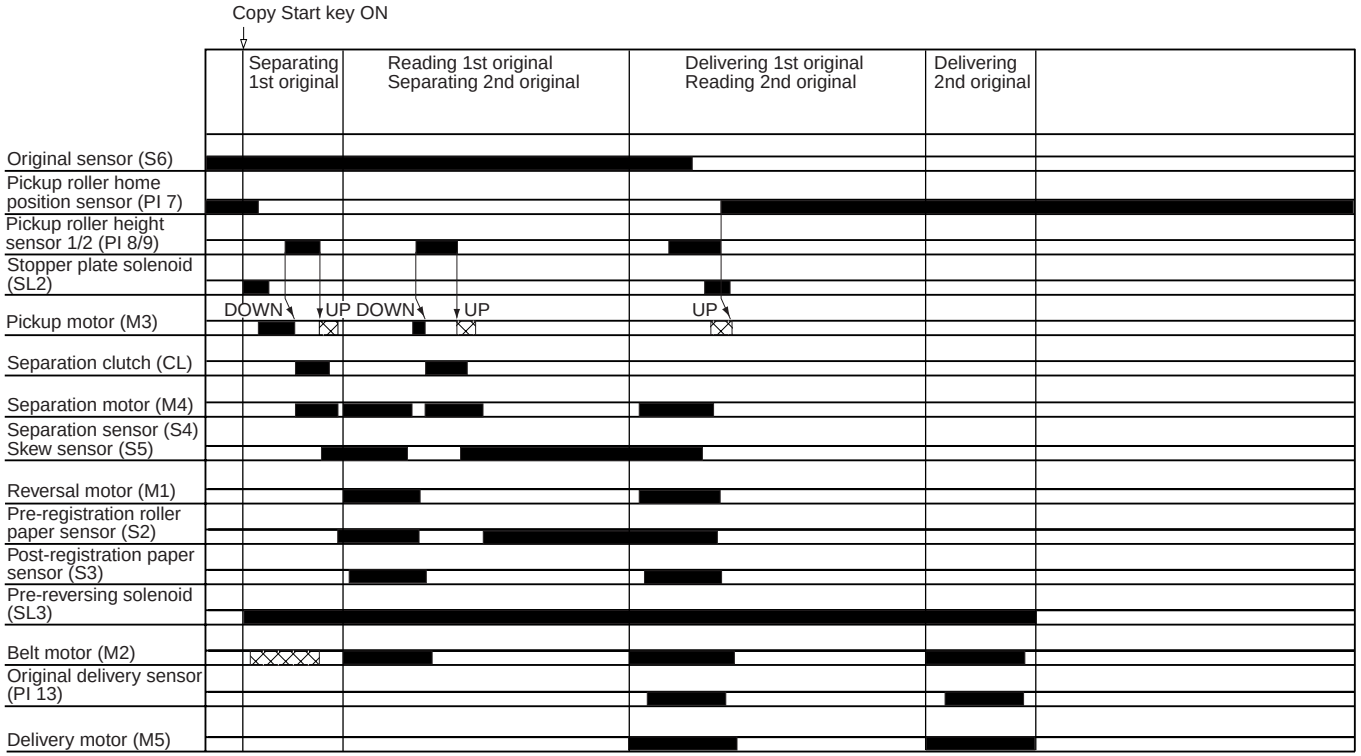

⊠: motor CCW rotation.

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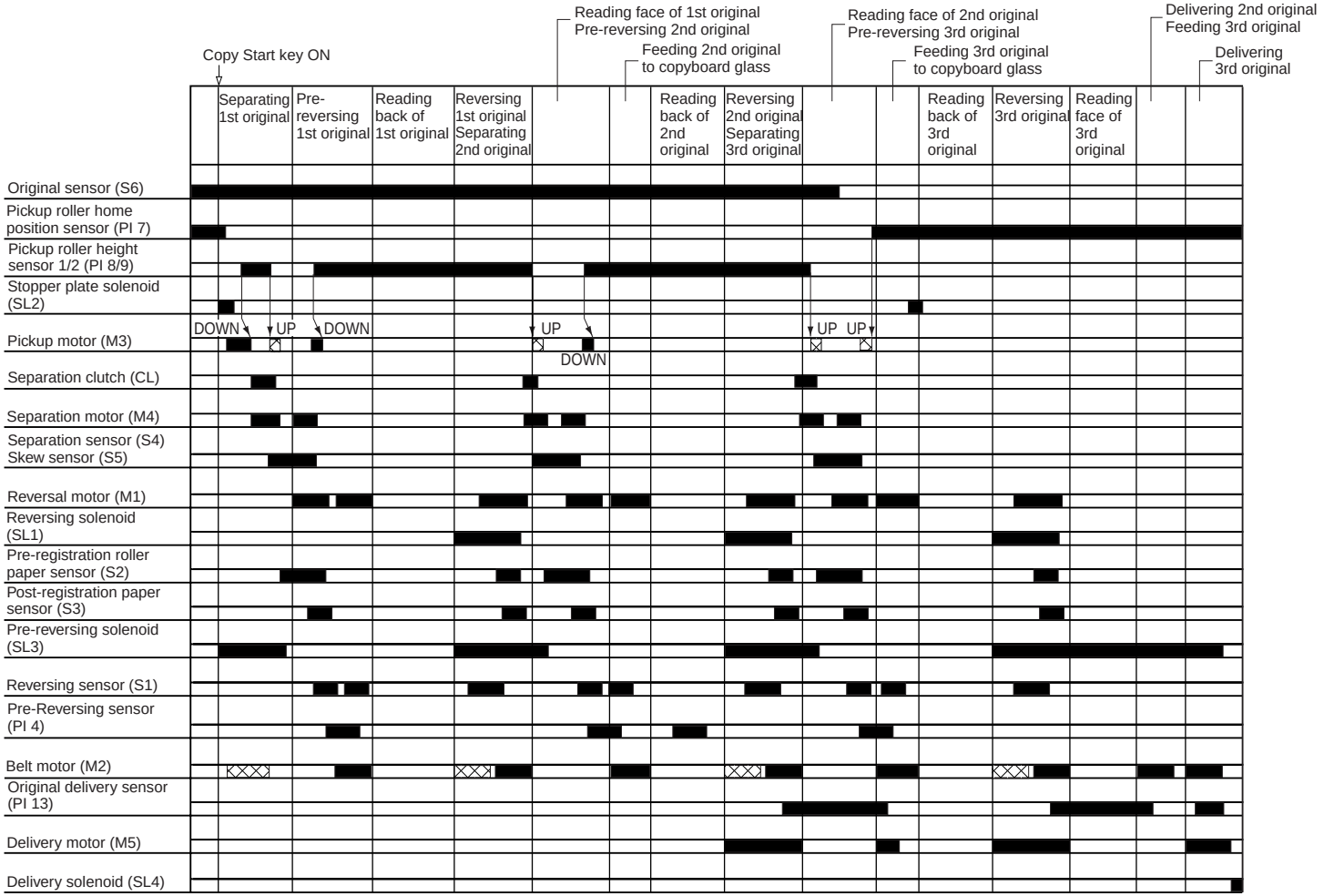
1.6 A4, 3 Double-Sided Originals, Fixed Reading



⊠ : motor CCW rotation.

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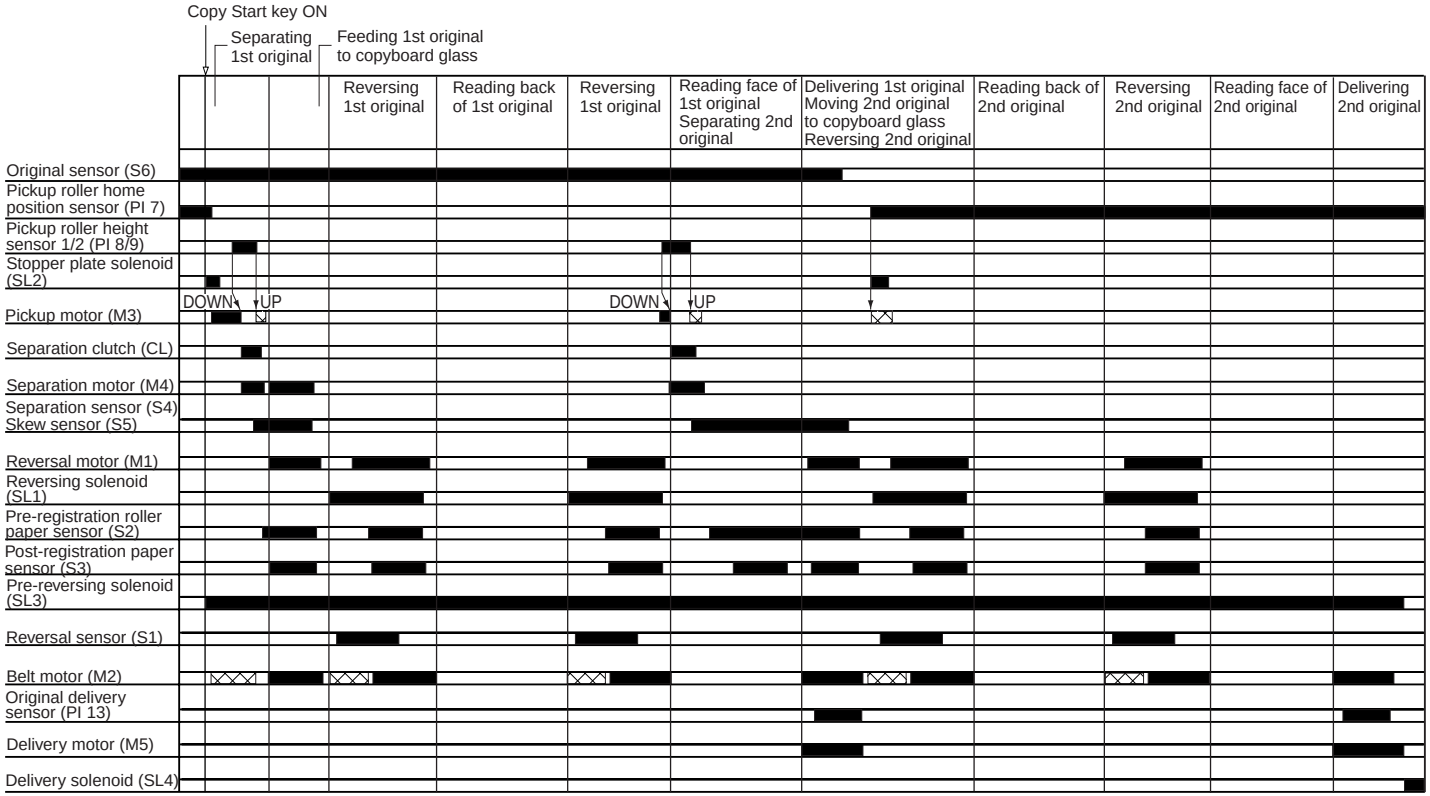

⌧ : motor CCW rotation.

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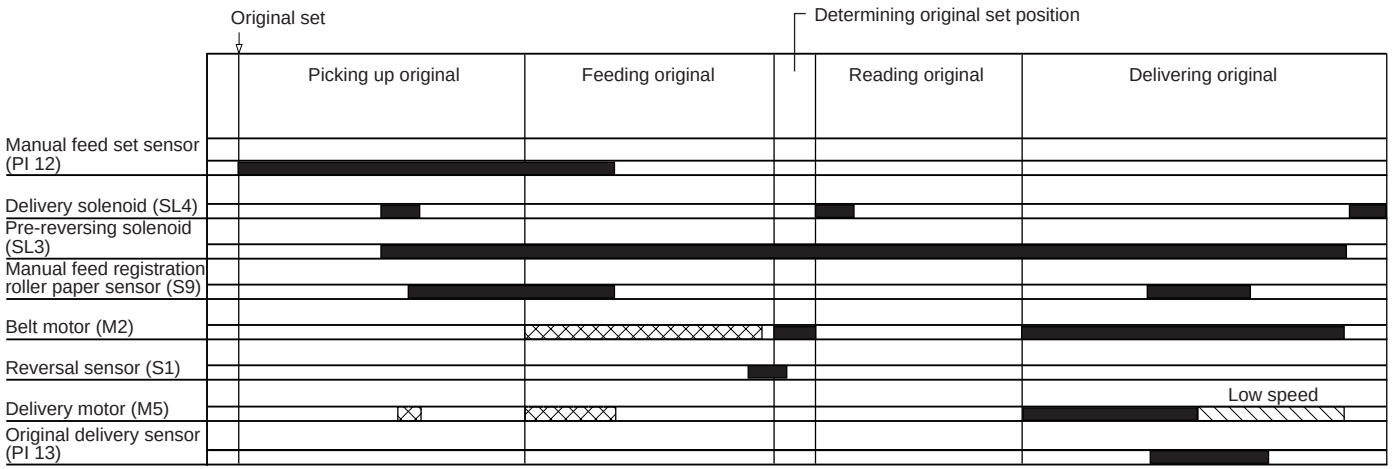
1.8 A4, 1 Single-Sided Original, Manual Feeding



: motor CCW rotation.

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2 Signals and Abbreviations

The following is a list of signals and its abbreviations used in this chapter and circuit diagrams.

The abbreviations in parentheses are electrical signals but are analog, which cannot be expressed in terms of '1' or '0'. Others are digital signals, which can be expressed in terms of '1' and '0'.

BTCLK	Belt Motor Clock Detection signal
B-Vref	Belt Motor Rotation Torque signal
CLD*	Clutch Drive command
CW/CCW	Rotation Direction signal
DTLED	Original Set LED Drive command
DTS	Original Detection signal
DTSAJ	Original Detection Reference signal
EJCLK	Delivery Motor Clock Detection signal
EJJAM	Original Delivery Detection signal
EJMD*	Delivery Motor Drive command
LAS	Pre-Last Original Paper Detection signal
LASAJ	Pre-Last Original Paper Detection Reference signal
LCVF	Left Cover Front Open/Closed Detection signal
LCVR	Left Cover Rear Open/Closed Detection signal
M1OA	Reversal Motor Drive command
M1OA*	Reversal Motor Drive command
M1OB	Reversal Motor Drive command
M1OB*	Reversal Motor Drive command
M3OA	Pick-Up Motor Drive command
M3OA*	Pick-Up Motor Drive command
M3OB	Pick-Up Motor Drive command
M3OB*	Pick-Up Motor Drive command
MFRGS	Manual Feeder Registration Roller Original Detection signal
MFRGSAJ	Manual Feeder Registration Roller Original Detection Reference signal
MFST	Manual Feeder Original Set Detection signal
MO1	Belt Motor Drive command
MO2	Belt Motor Drive command
PKH1	Pick-Up Roller Height Detection signal 1
PKH2	Pick-Up Roller Height Detecting signal 2
PKHP	Pick-Up Roller Home Position Detection signal
REF-CLK	Belt Motor Phase Control command
RFOP	ADF Open/Closed Detection signal
RGAS	Registration Rear Original Edge Detecting signal
RGASAJ	Registration Roller Rear Original Edge Detection Reference signal
RGBS	Registration Roller Front Original Edge Detection signal
RGBSAJ	Registration Roller Front Original Edge Detection Reference signal

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PRTR	Pre-Reversal Detection signal
SEPM+	Separation Motor Drive command
SEPM-	Separation Motor Drive command
SKS	Original Skew Detection signal
SKSAJ	Original Skew Detection Reference signal
SL1D*	Reversing Solenoid Drive command
SL2D1*	Stopper Plate Solenoid Drive command (position 1)
SL2D2*	Stopper Plate Solenoid Drive command (position 2)
SL3D*	Pre-Reversal Solenoid Drive command
SL4D1*	Delivery Solenoid Drive signal (position 1)
SL4D2*	Delivery Solenoid Drive signal (position 2)
SPCLK	Separation Motor Clock Detection signal
SPS	Separation Detection signal
SPSAJ	Separation Detection Reference signal
SSW-0	Original Width Detection signal 0
SSW-1	Original Width Detection signal 1
SSW-2	Original Width Detection signal 2
SSW-3	Original Width Detection signal 3
SSW-4	Original Width Detection signal 4
TAILS	Original Trailing Edge Detection signal
TAILSAJ	Original Rear Edge Detection Reference signal
TNS	Reversal Detection signal
TNSAJ	Reversal Detection Reference signal
TRCLK	Registration Roller Clock Detection signal
T-Vref	Reversal Motor Rotation Torque signal

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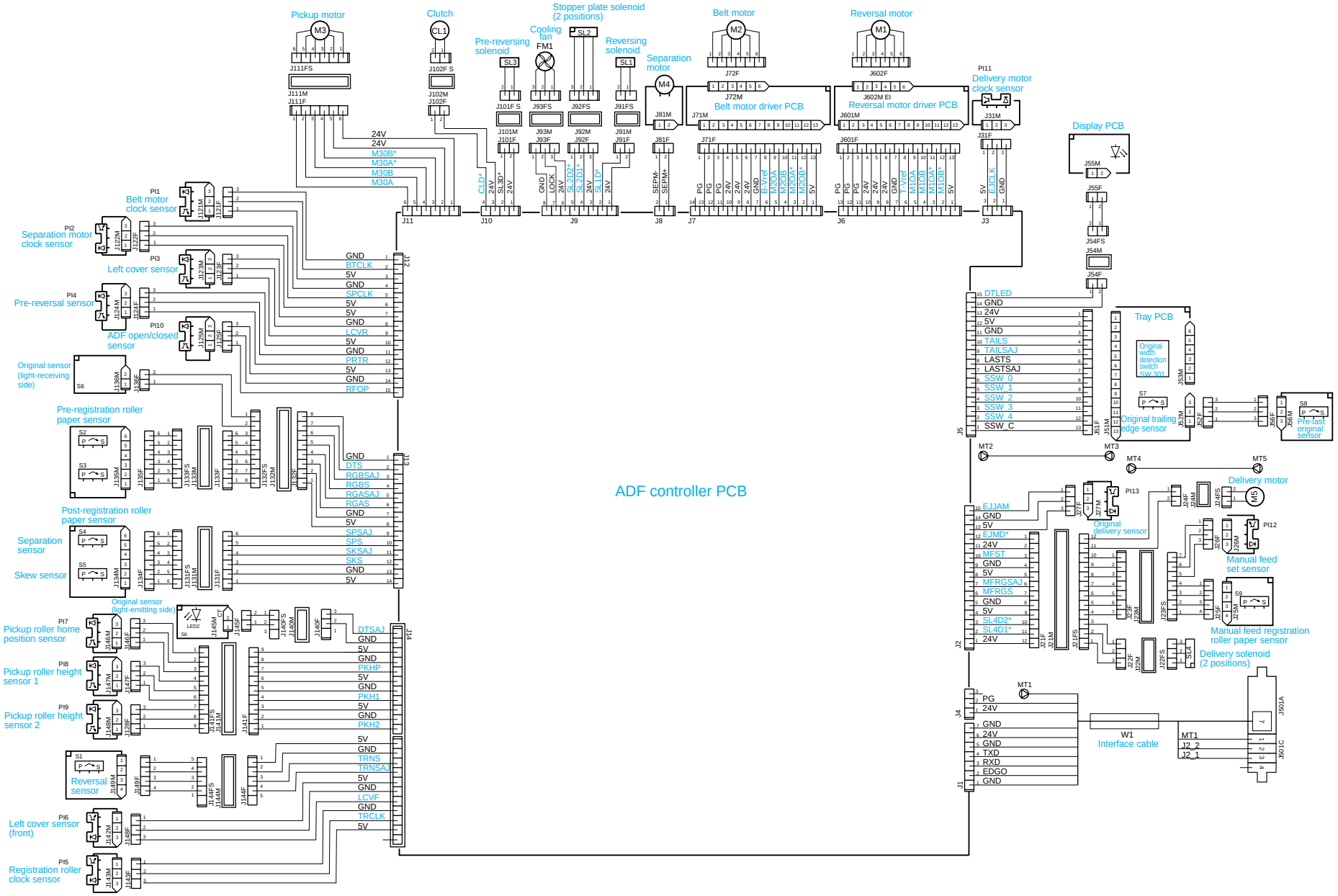
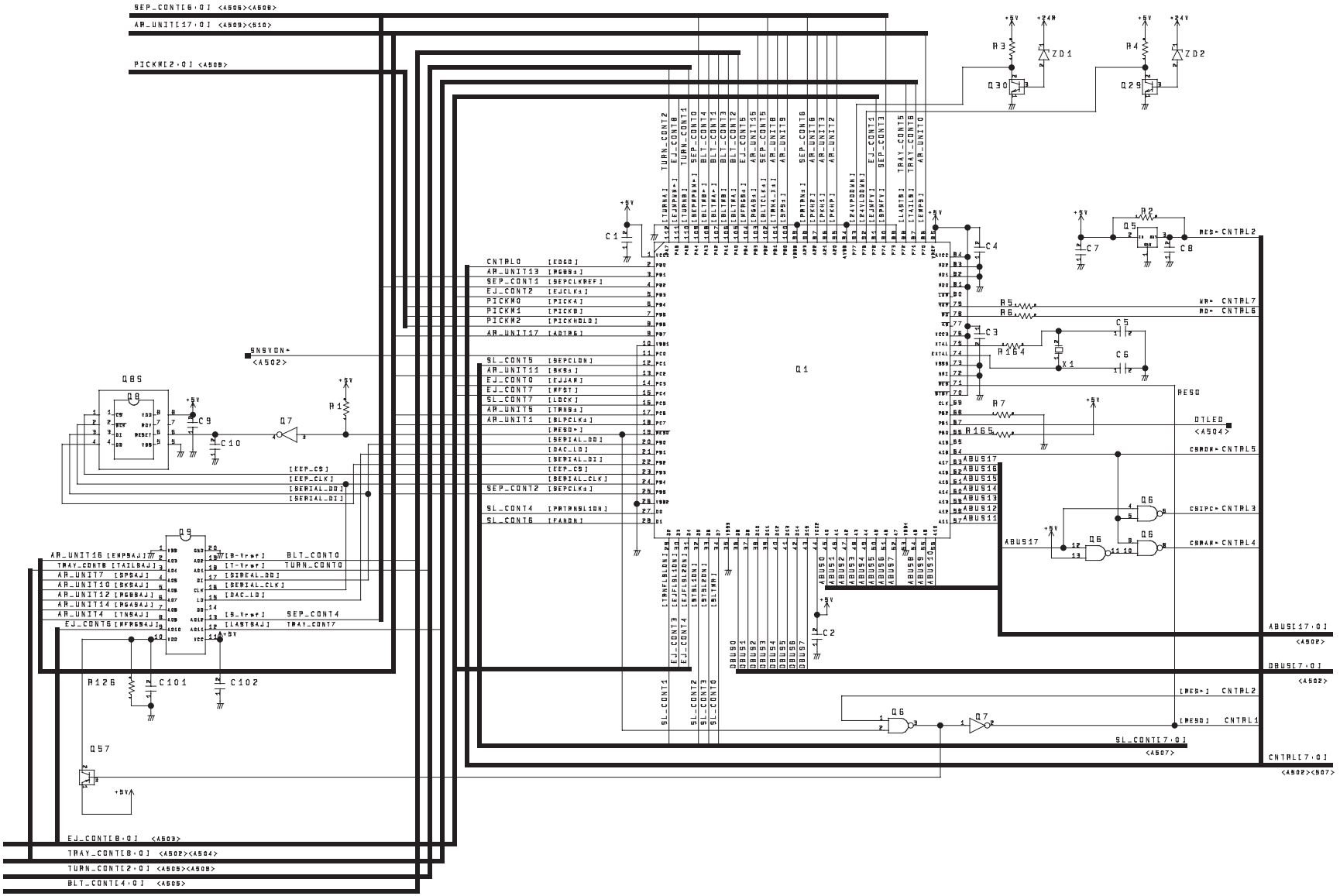

ADF controller PCB
Pickup motor
Clutch
Stopper plate solenoid (2 positions)
Cooling fan
Pre-reversing solenoid
Reversing solenoid
Separation motor
Belt motor
Reversal motor
Belt motor driver PCB
Reversal motor driver PCB
Delivery motor clock sensor
Display PCB
Tray PCB
Original width detection switch SW301
Original trailing edge sensor
Pre-last original sensor
Delivery motor
Original delivery sensor
Manual feed set sensor
Manual feed registration roller paper sensor
Delivery solenoid (2 positions)
Belt motor clock sensor
Separation motor clock sensor
Left cover sensor
Pre-reversal sensor
ADF open/closed sensor
Original sensor (light-receiving side)
Pre-registration roller paper sensor
Post-registration roller paper sensor
Separation sensor
Skew sensor
Original sensor (light-emitting side)
Pickup roller home position sensor
Pickup roller height sensor 1
Pickup roller height sensor 2
Reversal sensor
Left cover sensor (front)
Registration roller clock sensor
W1
Interface cable

ADF Controller Circuit Diagram (1/11) A502



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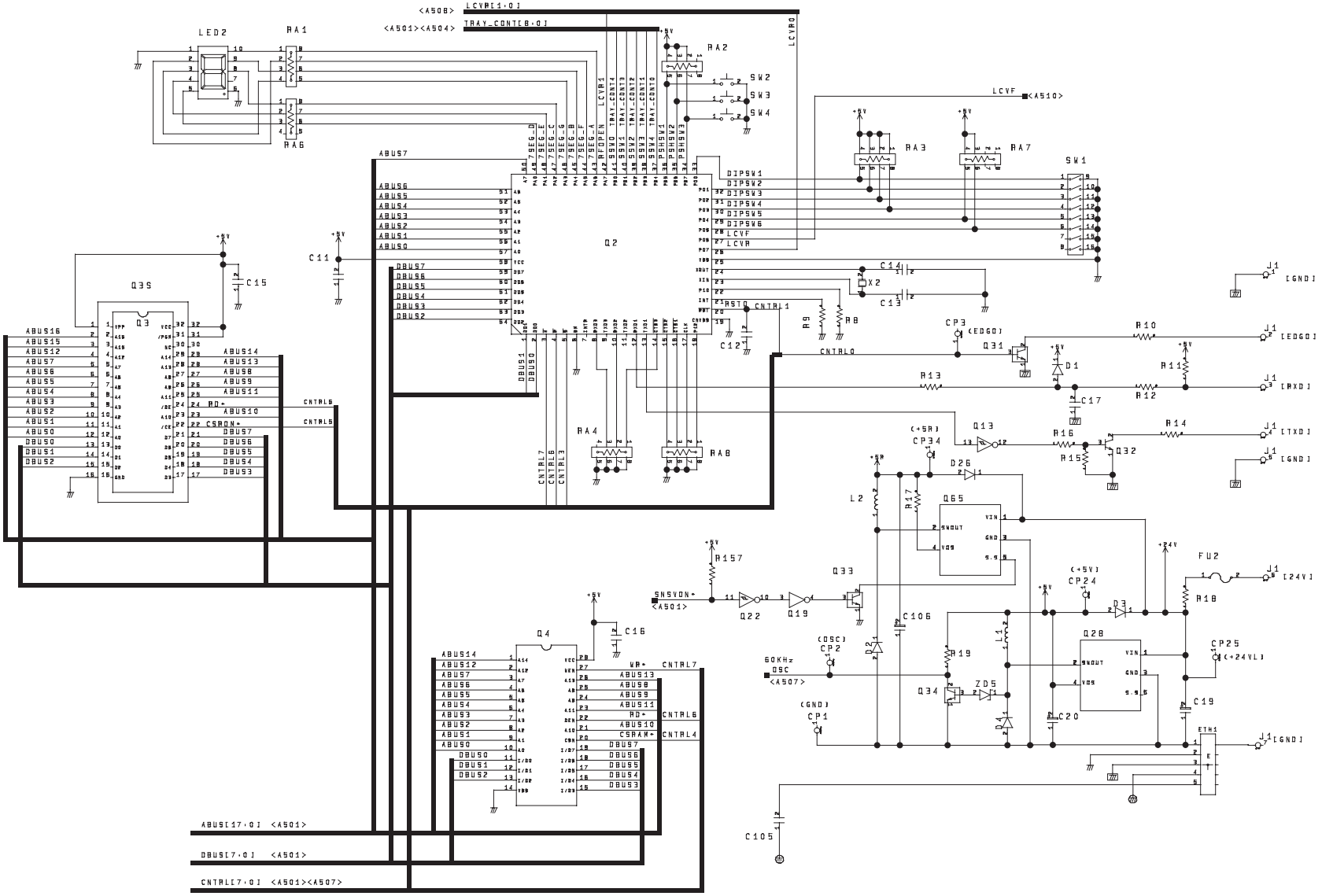
ADF Controller Circuit Diagram (2/11) A503



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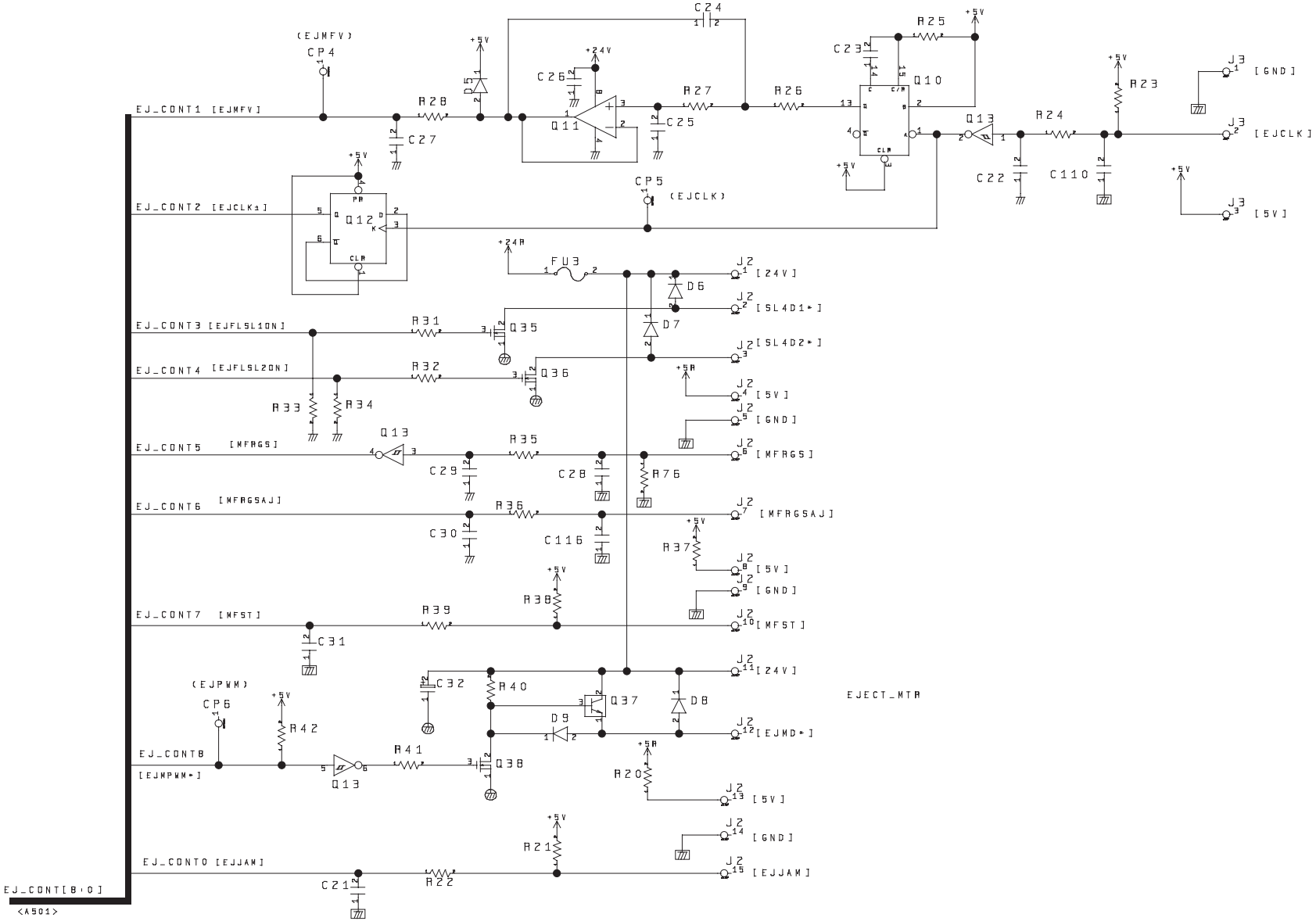

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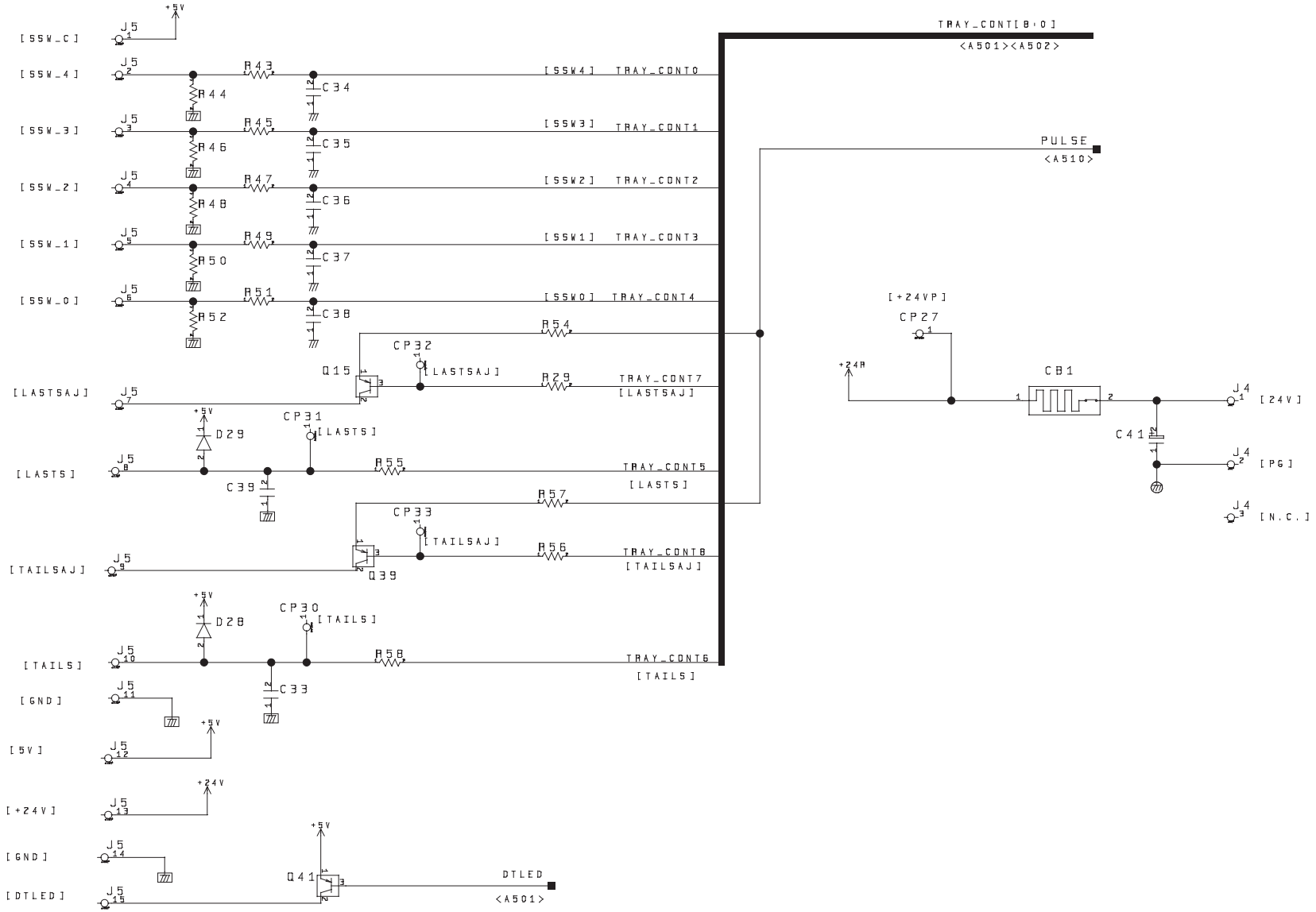
ADF Controller Circuit Diagram (4/11) A505



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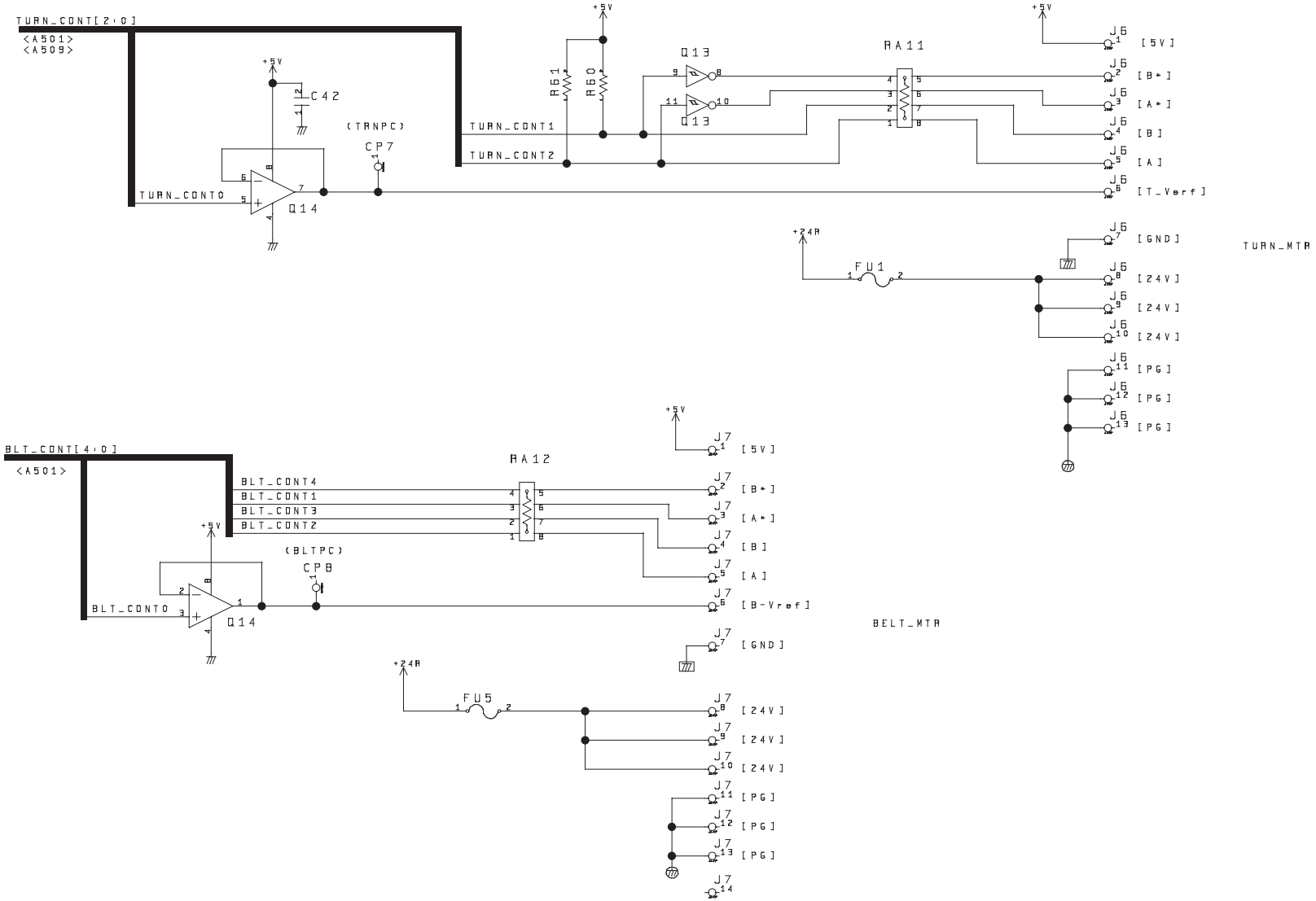

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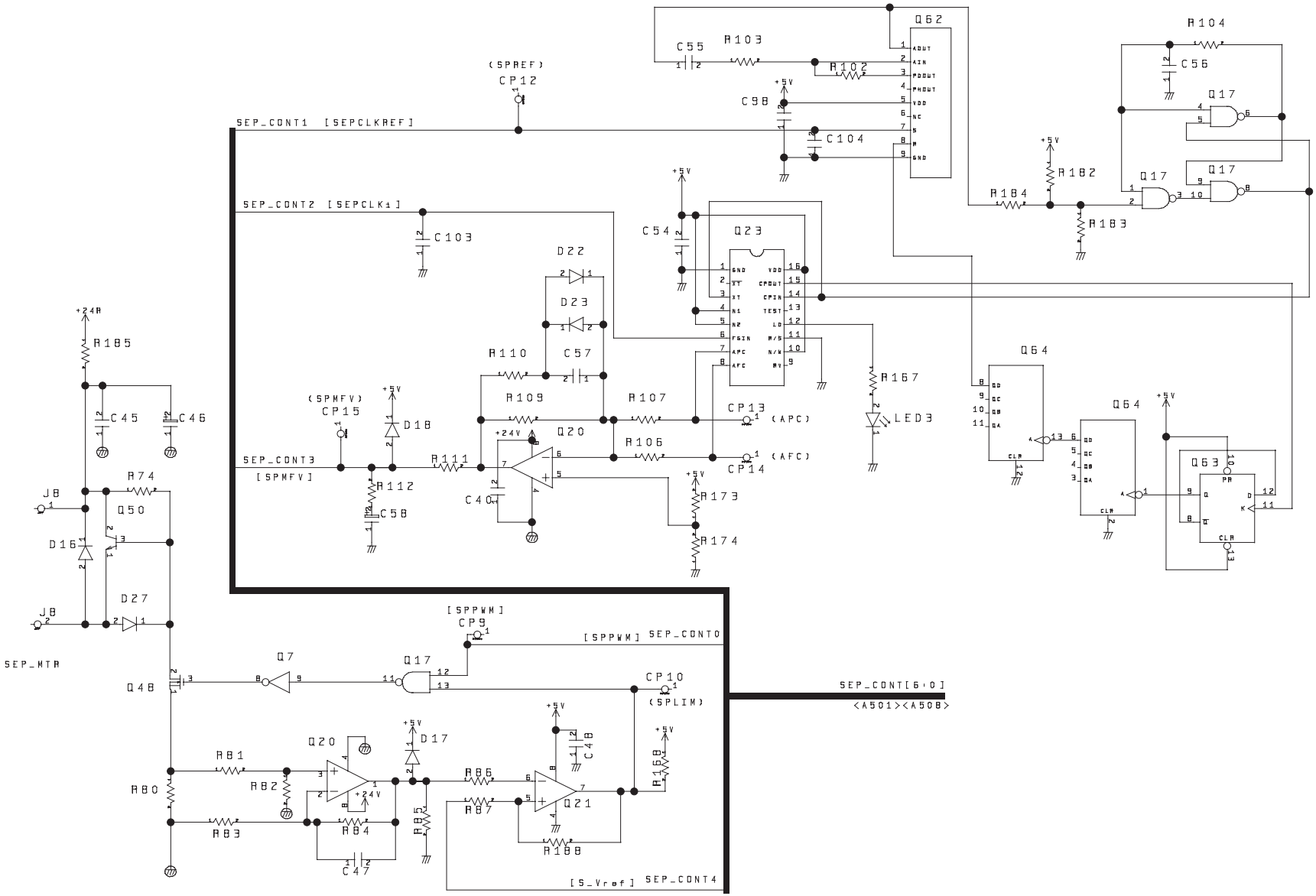
ADF Controller Circuit Diagram (6/11) A507



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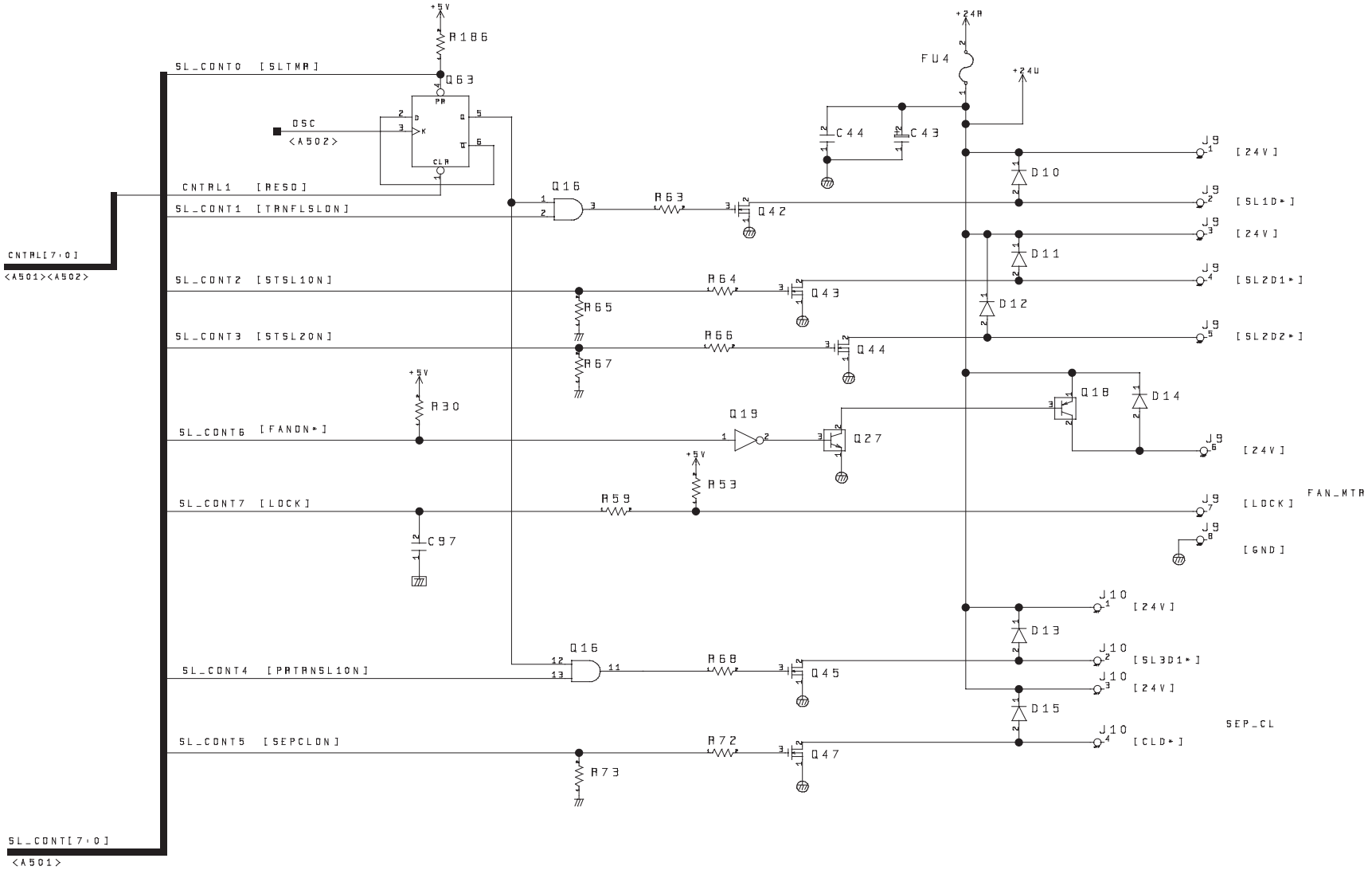

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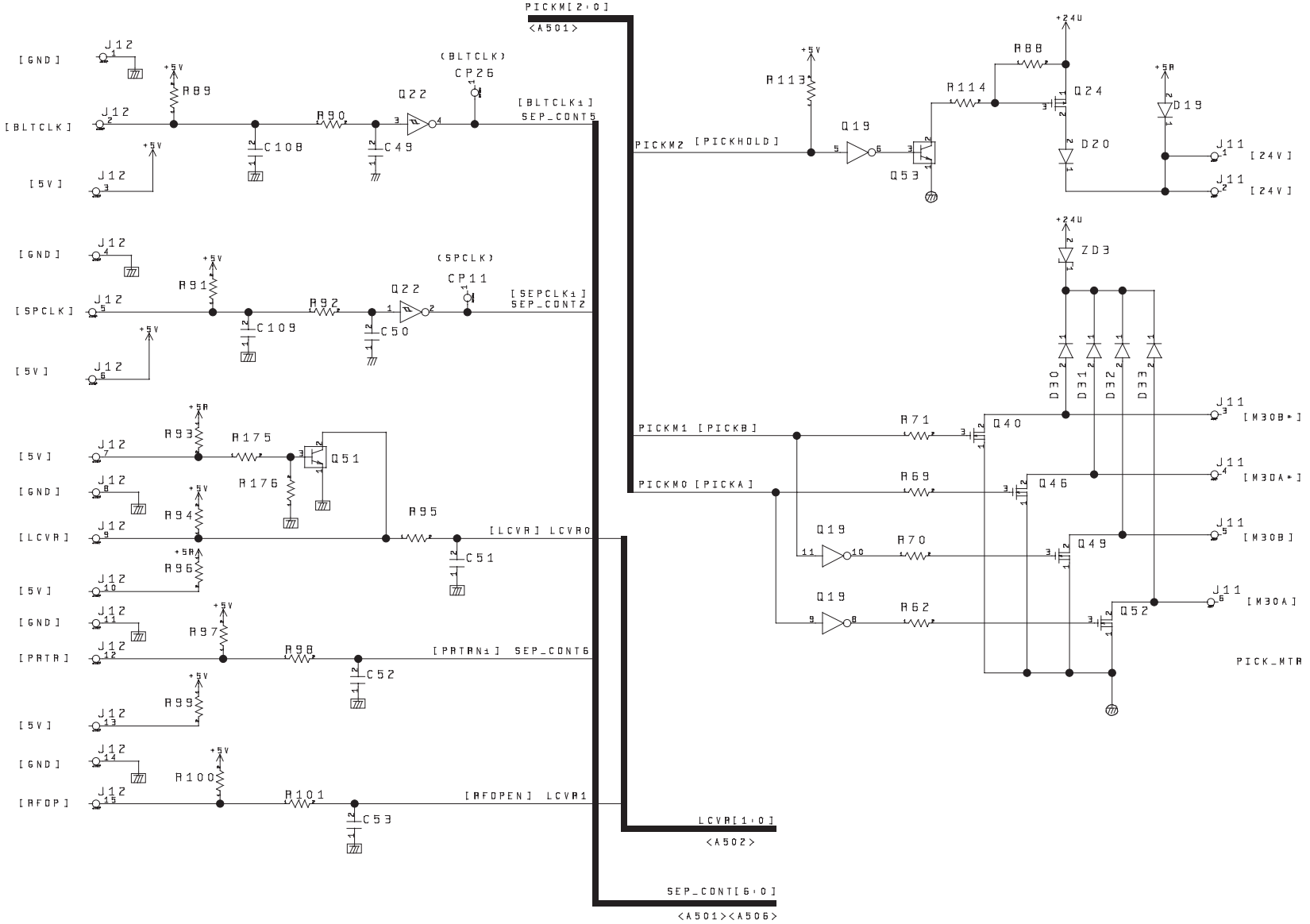
ADF Controller Circuit Diagram (8/11) A509



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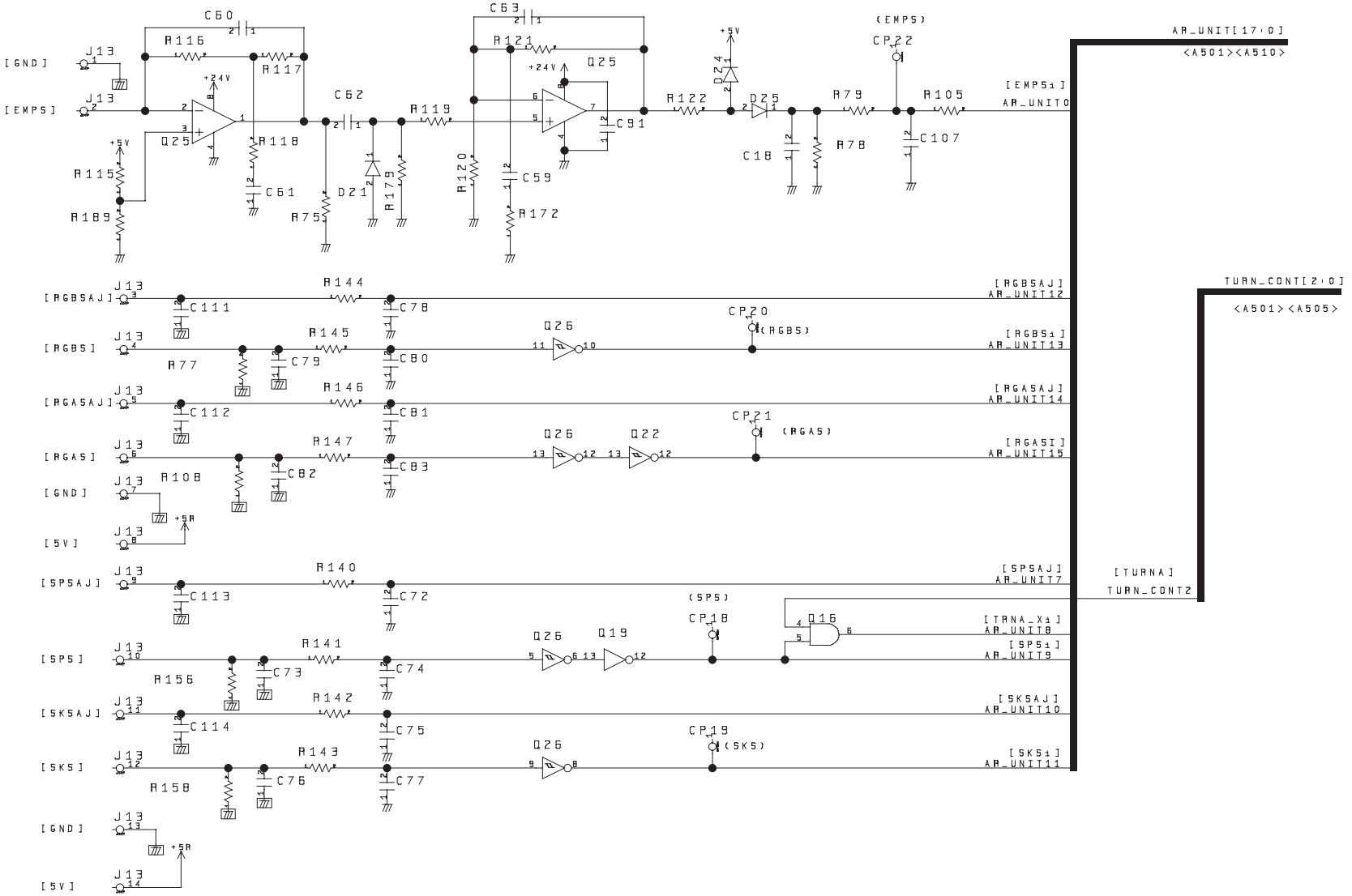

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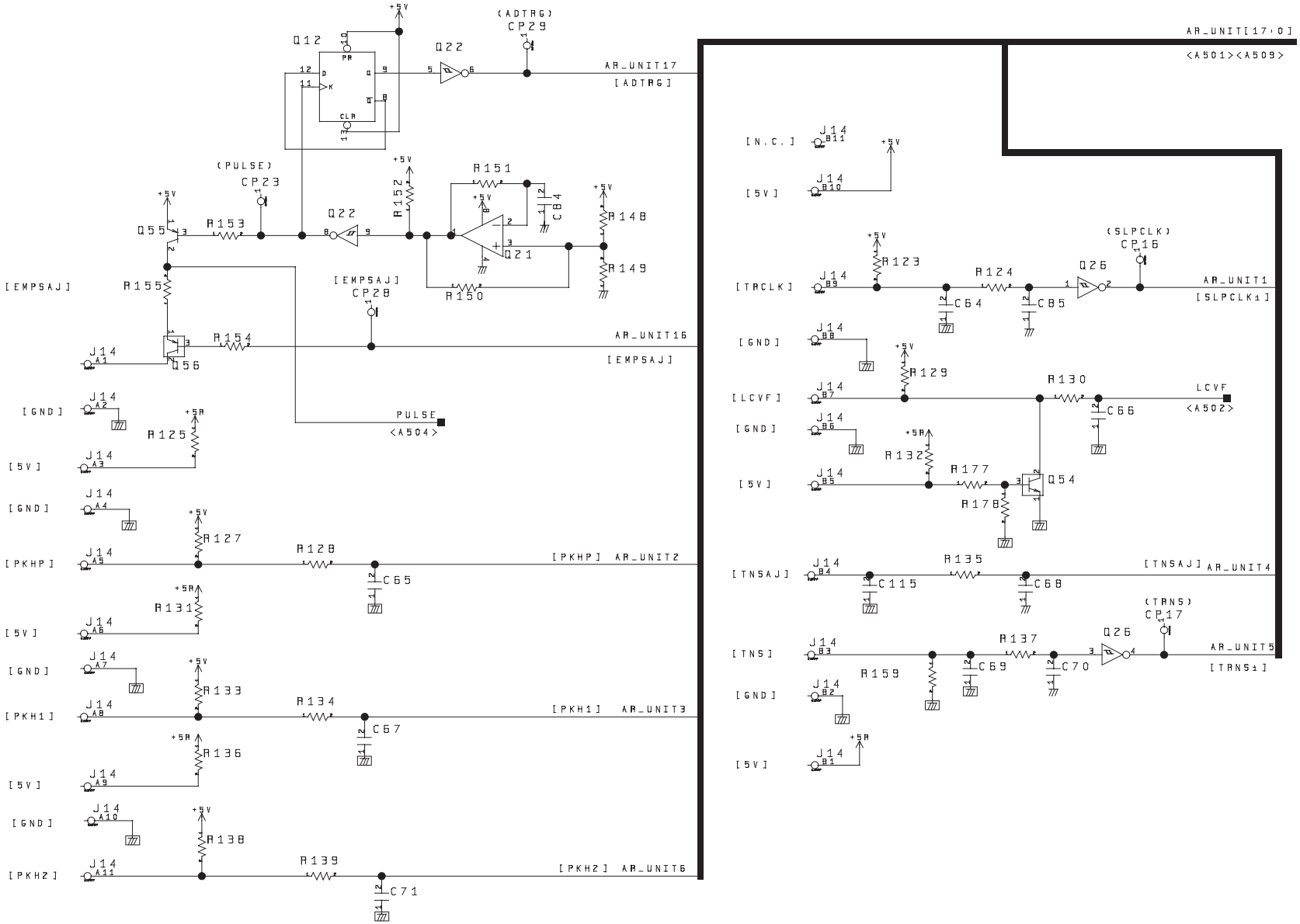
ADF Controller Circuit Diagram (10/11) A511



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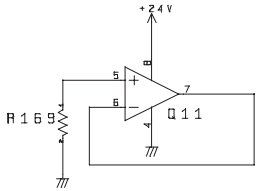
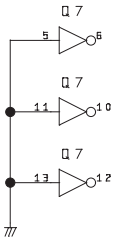
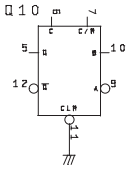
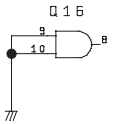
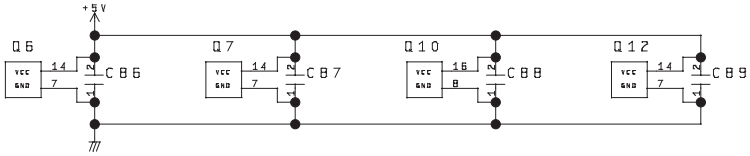
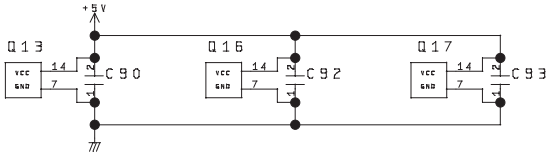


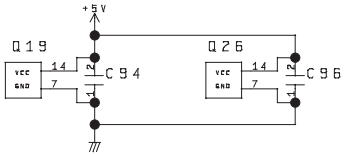


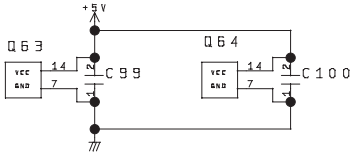


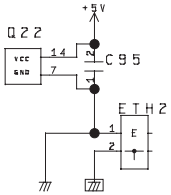






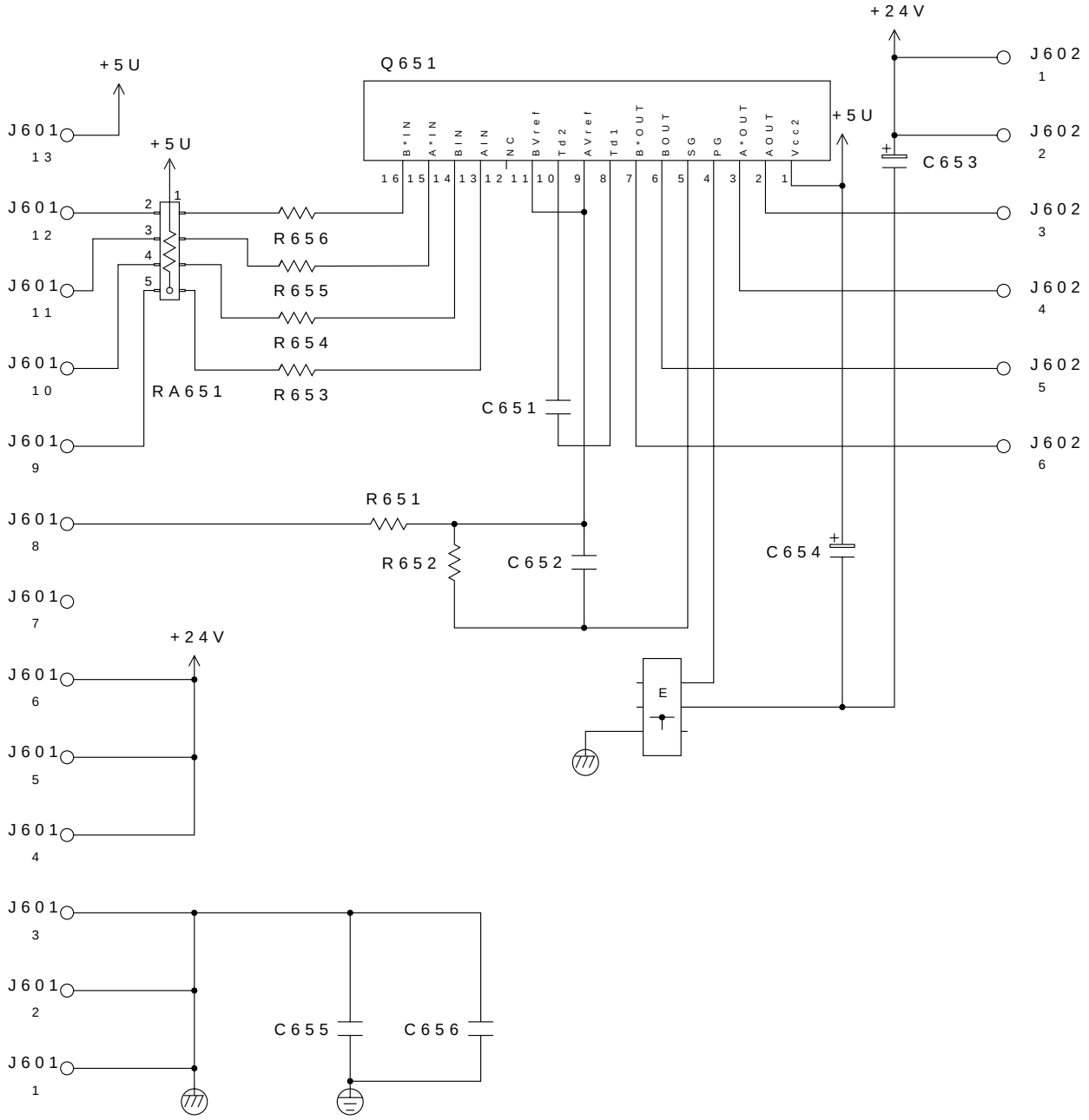




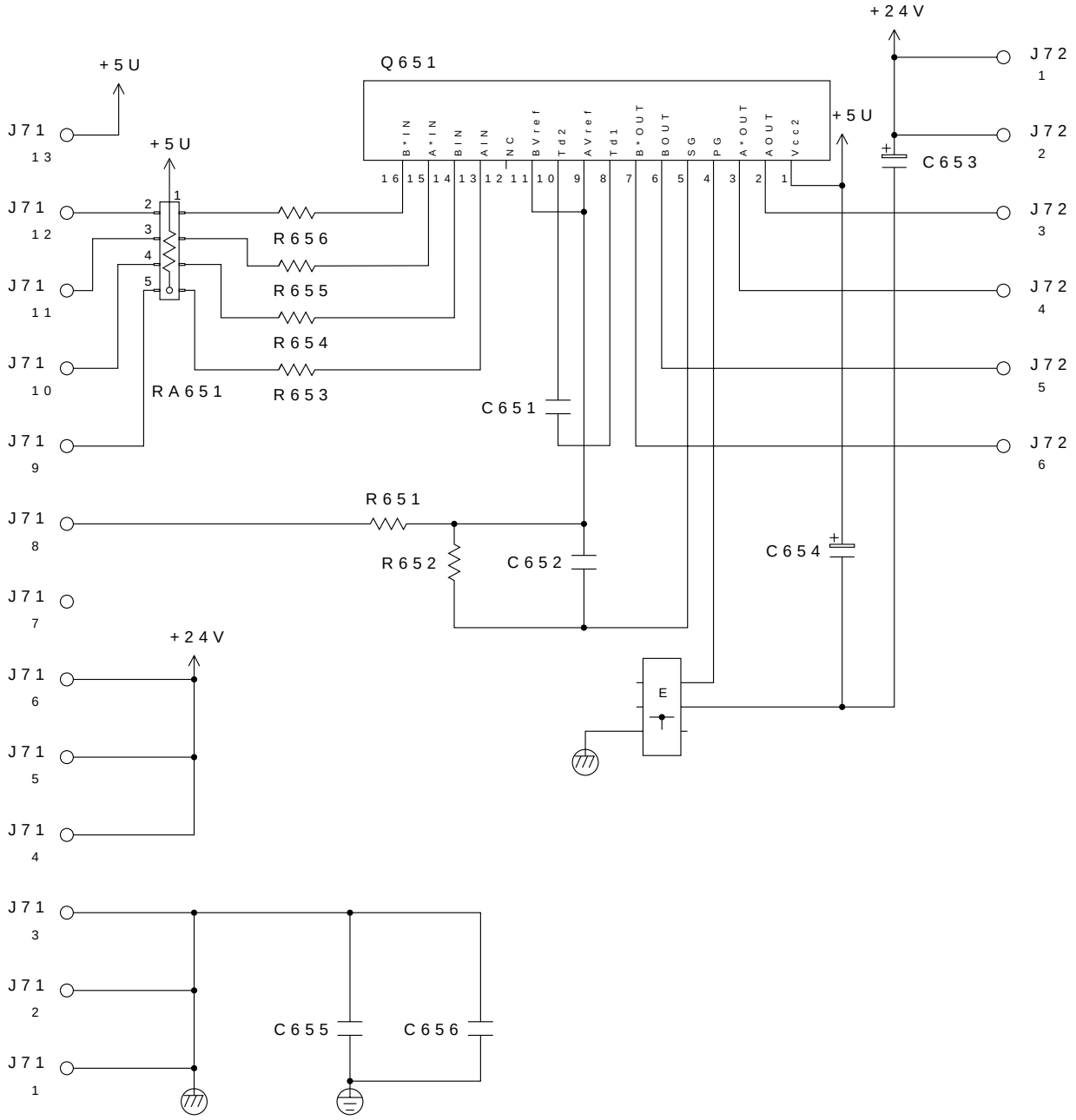


ADF-Y2 DC_CONTROLLER

5 Reversal Motor Driver Circuit Diagram



6 Belt Motor Driver Circuit Diagram



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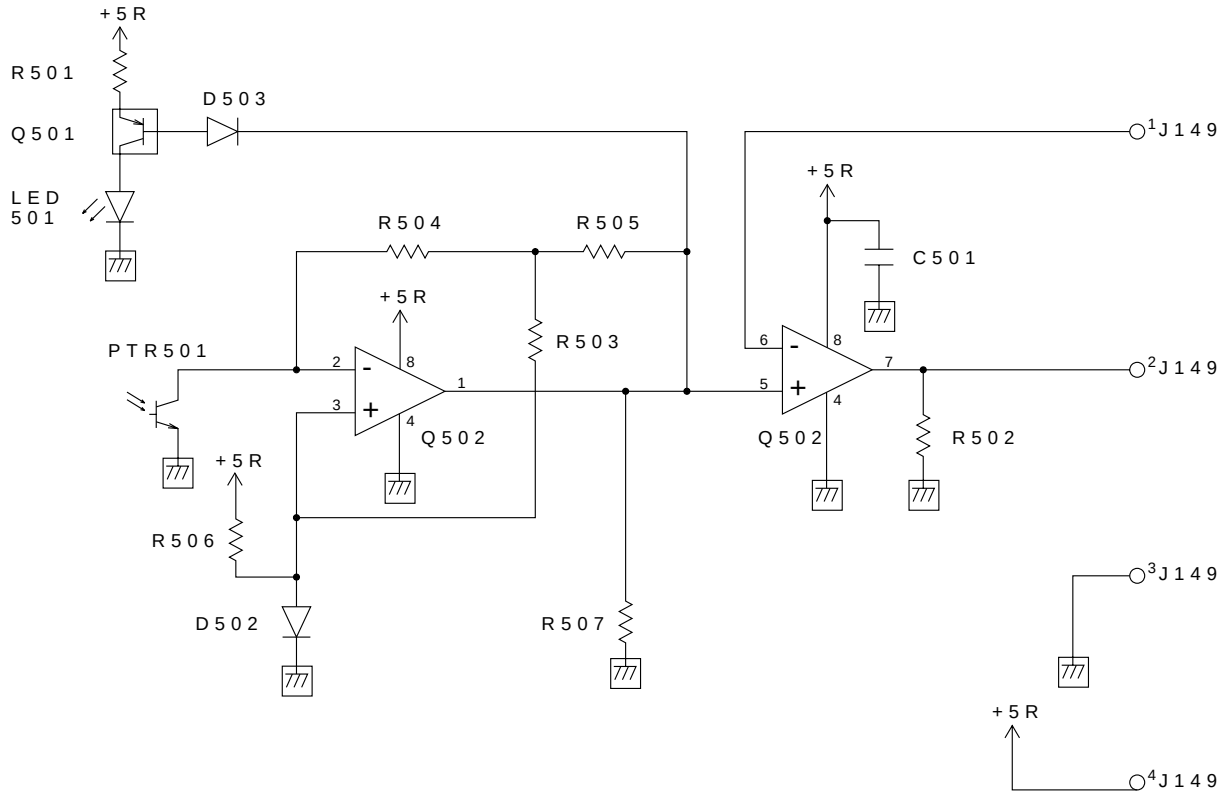
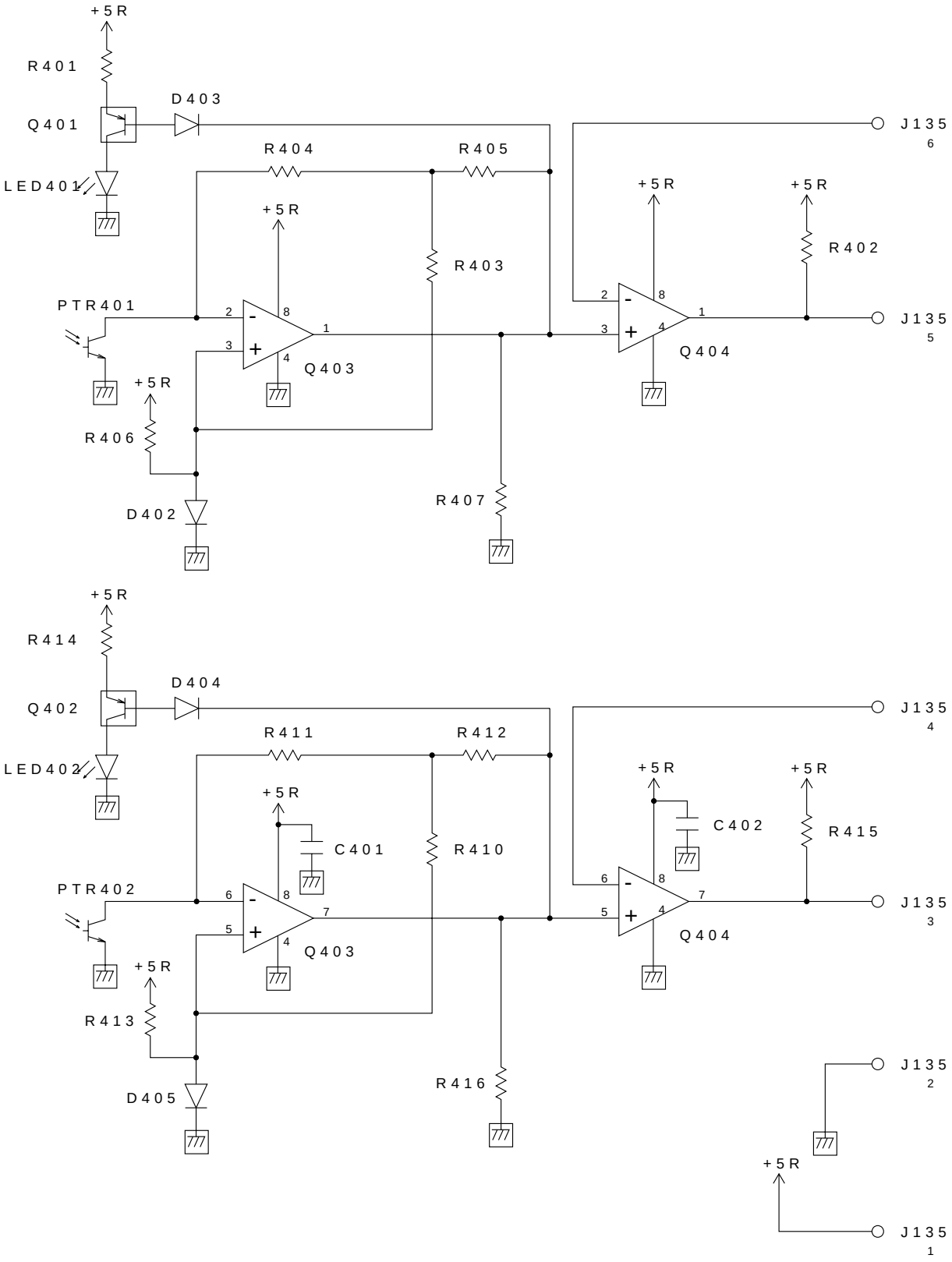
7 Reversal Sensor Circuit Diagram



8 Pre-/Post-Registration Roller Sensor Circuit Diagram



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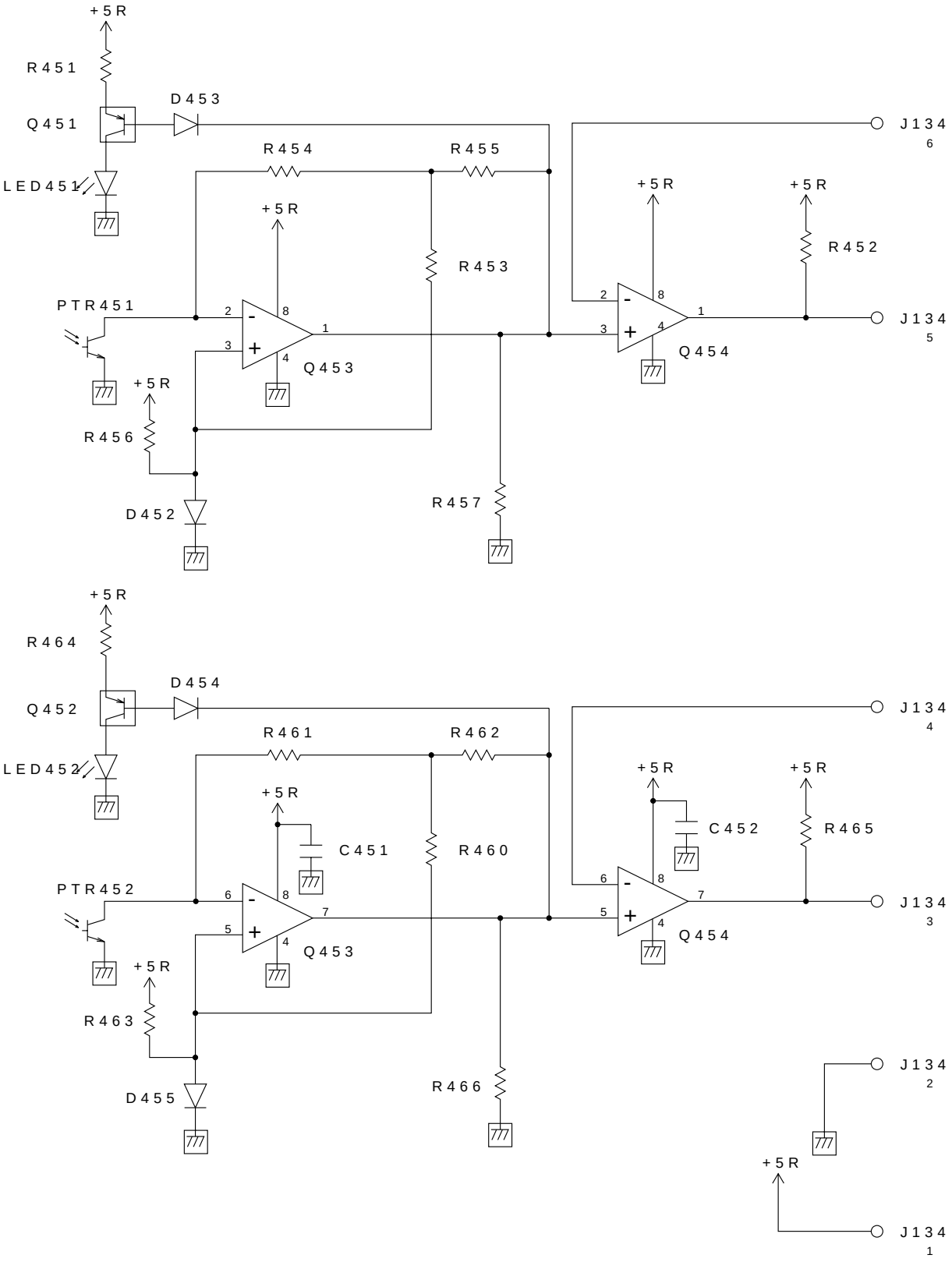
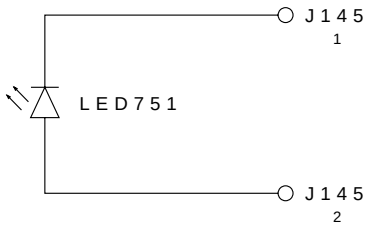
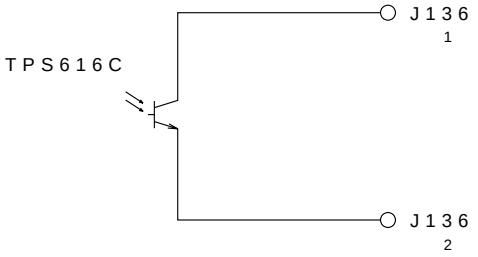
9 Separation Sensor/Skew Sensor Circuit Diagram



10 Original Sensor (light-emitting) Circuit Diagram



11 Original Sensor (light-receiving) Circuit Diagram



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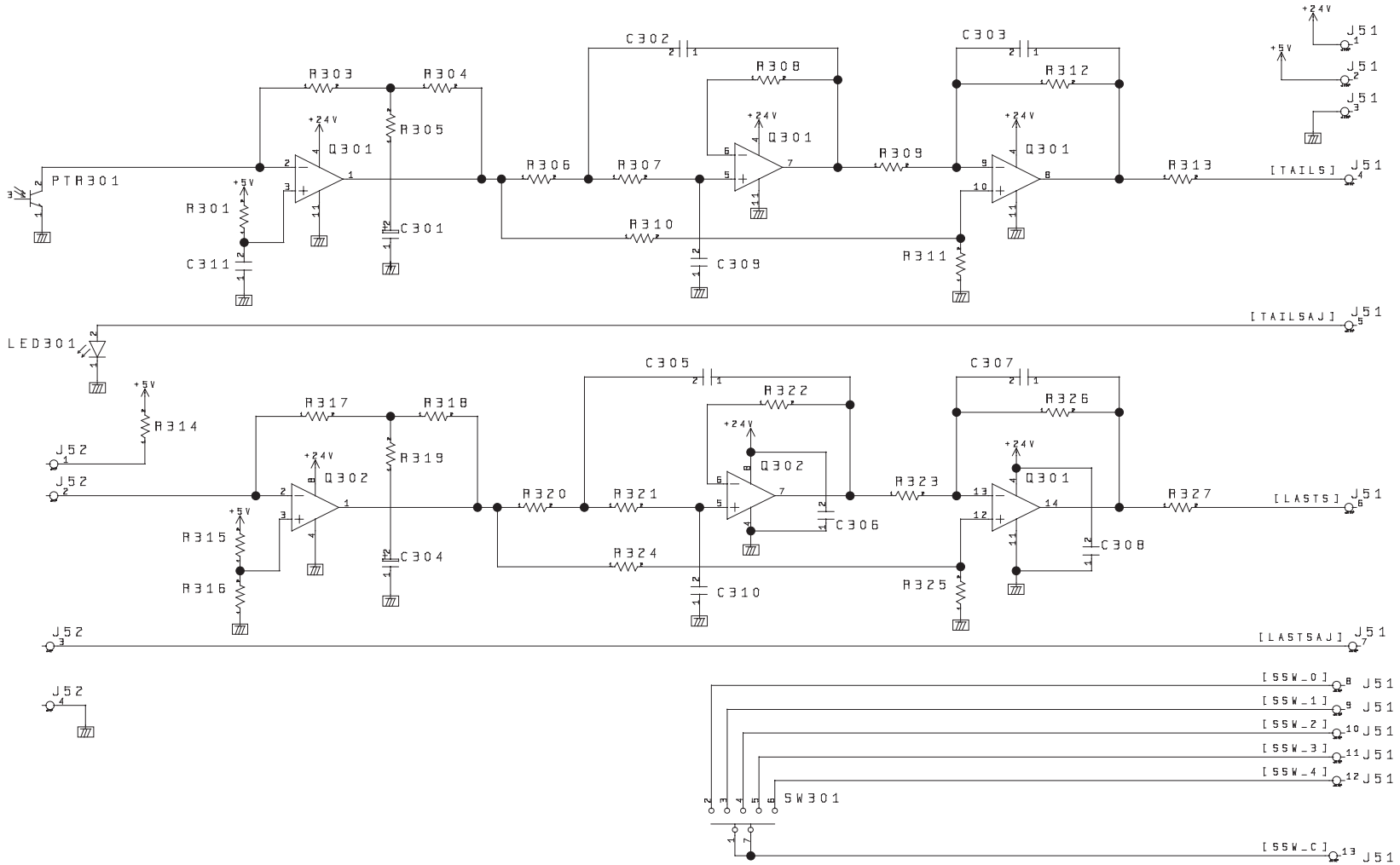

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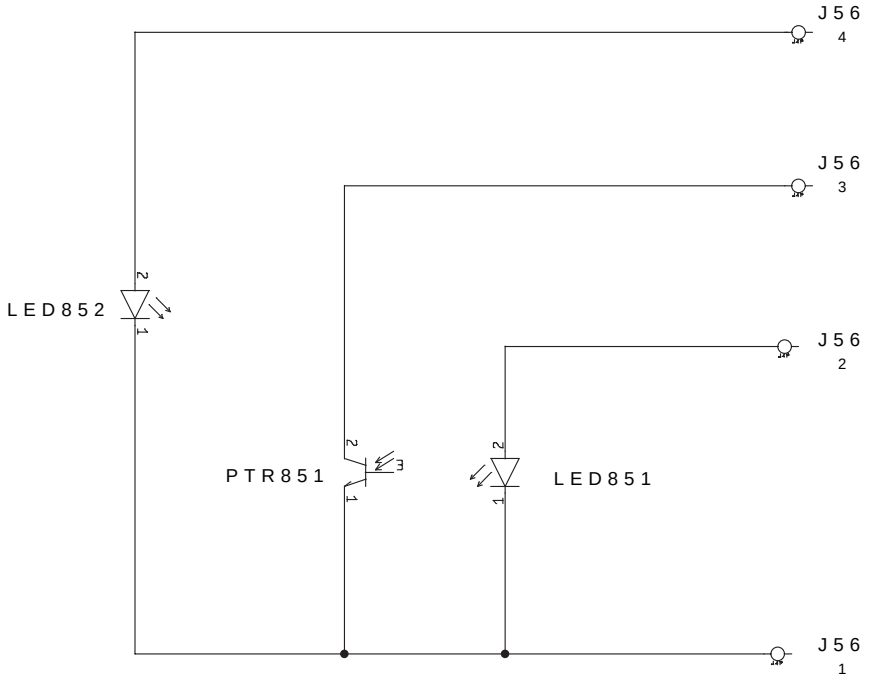
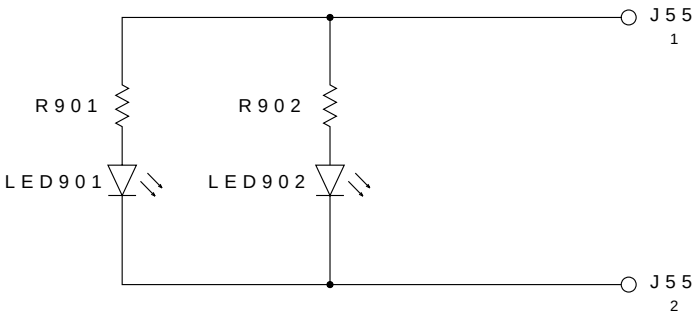
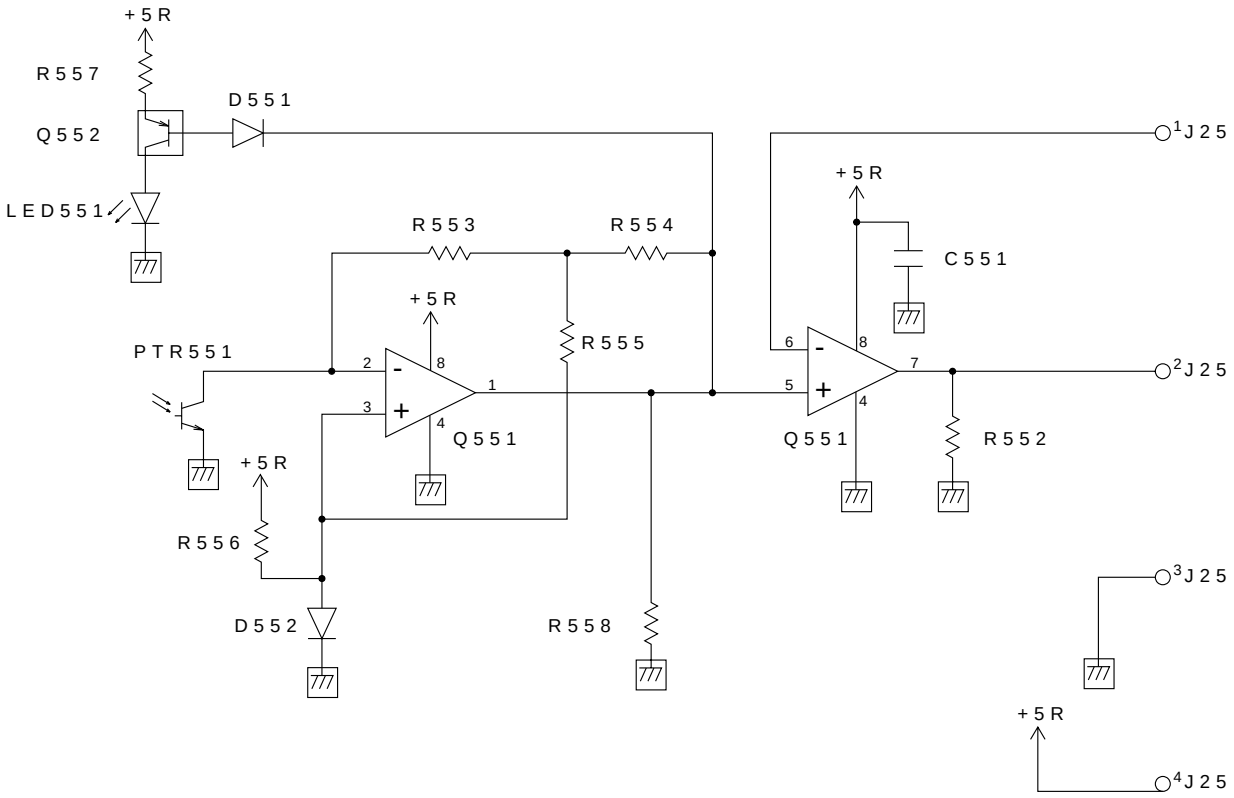
13 Pre-Last Original Paper Sensor Circuit Diagram



14 Original Set Indicator Circuit Diagram



15 Manual Feed Registration Roller Paper Sensor Circuit Diagram



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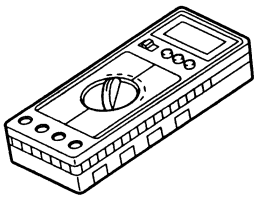
16 Special Tools

You will need the following special tool when servicing the machine in addition to the standard tools set

No.	Tool name	Tool No.	Shape	Rank*	Remarks
1	Digital multifeeder	FY9-2002-000		A	For making electrical checks

Memo

*Use the following as a guide:
A: Each service person is expected to carry one.
B: Each group of five service persons is expected to carry one.
C: Each workshop is expected to carry one.

17 Solvents and Oils List

No.	Name	Uses	Composition	Remarks
1	Alcohol	Cleaning; e.g., glass, plastic, rubber (external covers).	Fluorine-family hydrogen carbon, alcohol, surface activating agent	• Do not bring near fire. • Procure locally. • IPA (isopropyl alcohol)
2	Lubricant	Driving parts, friction parts	Silicone oil	CK-0551 (20 g)

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